seveno DataSight

Users Manual

Version 2.9.4

Seveno Pty Ltd
Canberra, ACT

Seveno Pty Ltd

Printed: May 2013 in Canberra, ACT

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2 Your feedback

To help us improve what we offer, we would like your feedback about this Help File, and about any other aspect of DataSight.

email at: support@seveno.com

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Fax: +61 2 6228 1996

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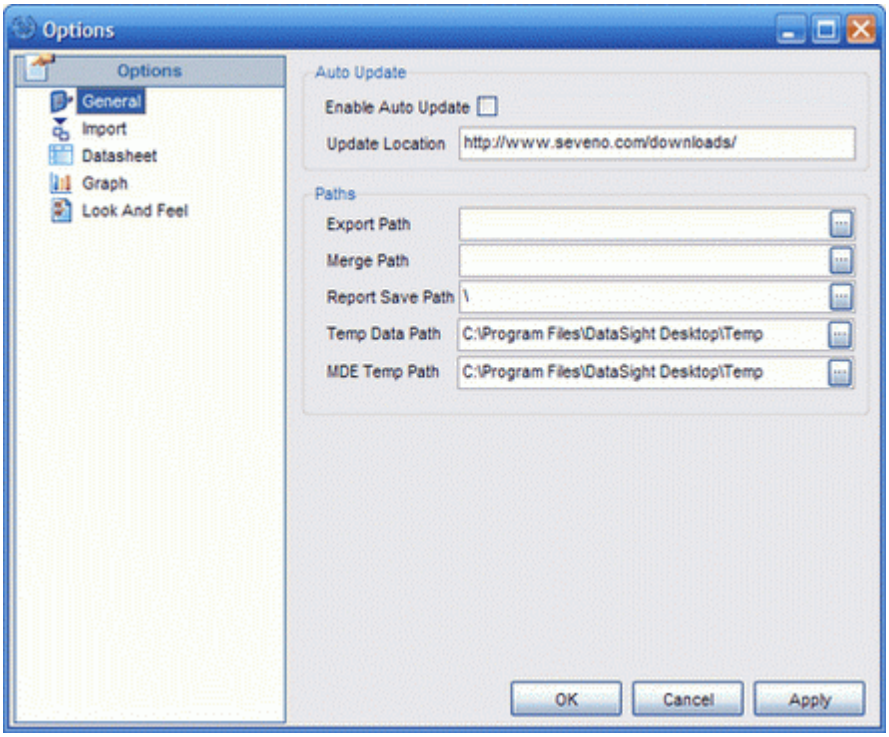
3 Get the the latest version

Check on start up

If your PC is connected to the Internet DataSight can check for updates as it opens to make sure that you have the latest version. You will be prompted to update and taken through the update process if you choose this. If you prefer, you can turn this option off and then check for any updates on demand. To do this:

Turn off Auto Update on start up

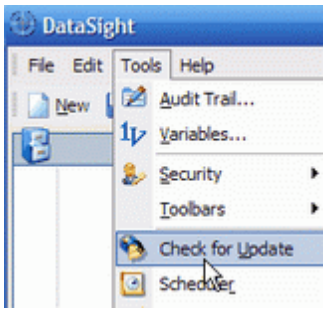
1. Click Tools, Options on the main menu.



2. Select General in the left panel directory of the Options dialogue box.
3. Uncheck the Enable Auto Update checkbox and click OK.

To update on demand

1. Click Tools on the main menu
2. Select Check for Update and follow the onscreen instructions.



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4 What is new in DataSight version 2.9

DataSight 2.9 has the same user interface as earlier versions but it has plenty of new features.
It is even more reliable and robust than before. Here is the list of the exciting new features.

- Maps: DataSight has an in-built link to Google Maps allowing users to view station locations or important sites within the database.
- Regression Analysis tool for statistical analysis of data and the creation of rating tables and applying rating tables to existing data (Enterprise edition only).
- Flagging feature - assign user-defined flags to specific data/datasets including a freehand graphical interface (Enterprise edition only). This feature has replaced the Data Quality feature included in earlier versions of DataSight.
- Interpolation Tool - provides users with the ability to construct new data points within the range of a discrete set of known data points. This graphical curve fitting feature expands on DataSight's existing calculations and analysis capability, allowing simple linear spline interpolation along with cubic spline and Akima spline to perform interpolation operations with ease.
- Scheduler - a tool for scheduling reports, graphs, calculations and datasheets. New features include automated emailing and a scheduled task log to review completed scheduled tasks. Active property enables users to one click operation to enable and disable tasks.
- Audit Trail provides very efficient audit logging for Import, Conversion, Data Quality, data editing and manual data entry (Enterprise edition only).
- The Audit Trail has an additional Calibration tool which allows for instrument and equipment calibration entries.
- Automated raw data storage on Import (Enterprise only).
- Control Documents allows storage of raw data files, reports, PDF files, site documentation, images, videos, maps and much more. Accessible by every DataSight user, this provides an excellent document management system for your databases.
- DataSight reporting tools:
  Tabular Report Wizard provides an extensive range of tabular reports within a few quick and easy steps.
  Report Creator is available for both Desktop and Enterprise versions as a built-in tool.
- DataSight Conversion Tool has been re-engineered and redesigned from scratch as a built-in tool.
- Look-up Conversion Tables provide look-up conversion in the conversion tool.
- Scientific Standards to monitor and report on data quality. Be notified when data is not complying with Scientific Standards.
- Improved Gauging Calculator for gauging measurements and flow calculation. New features include file saving, measurement units, measurement quality and collector information. Flow calculations can also be entered manually.
- Statistical functions, such as Average, Minimum and Maximum for Graphs.
- Calculations during Import.
- GIS data views for Station Properties can contain several geographic information types, such as easting and northings, X and Y co-ordinates, etc.
- Construction Details allows station specific construction information to be stored within DataSight.
- SQL views (with Enterprise edition) provides easy connection to MapInfo, ArcGIS and other GIS software for spatial analysis and mapping.
- DataSight Enterprise's Database Engine provides a very strong and fast connection to the database server.

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- Hundreds of minor improvements and bug fixes.

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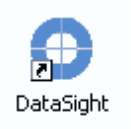
5 Quick Tour

Welcome to the DataSight Quick Tour.



DataSight is a windows-based relational database custom-designed for the easy management, storage, retrieval, profiling and sharing of environmental data. Custom-designed by an environmental scientist, DataSight combines the management and storage features of a database with graphing and filtering functionality to give you a complete post-collection data solution.

- Import datasets in common formats like spreadsheets, comma-delimited or text files or even directly from environmental sensors or probes
- Create and send databases to other users
- Receive and merge data from other users
- Profile data visually with full control over formatting
- Interrogate data by filtering

Spend the next 5 minutes on the DataSight Quick Tour and check out how DataSight works.

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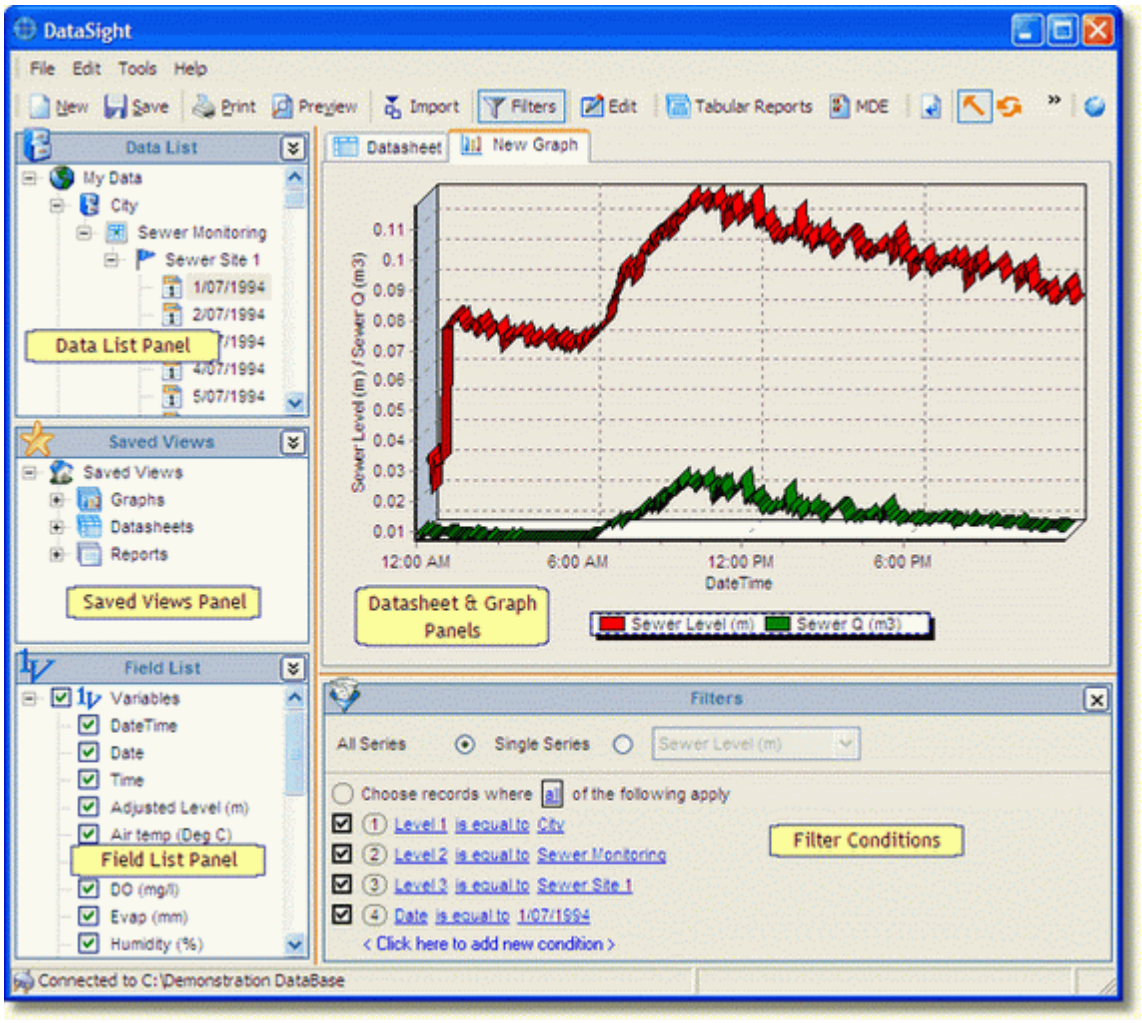
5.1 Quick Tour: Layout

The main DataSight window can be divided into 5 panels. The three panels to the left contain Data List, Saved Views, and Field List for the database. The main panel contains two tabs allowing you to view the Datasheet and Graph (and also a saved report). The bottom panel contains the filters.



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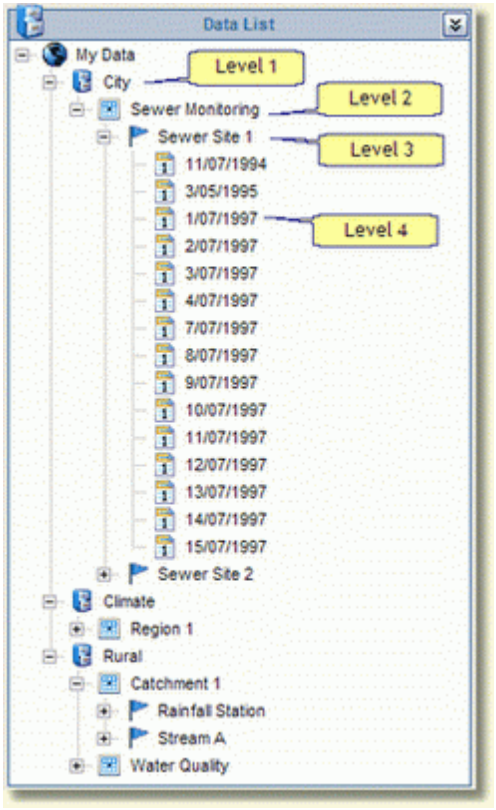
Data List

DataSight comes with a sample database so that you can try the range of DataSight features before you import your own data.

The DataSight database is configured in 4 tiers consisting of:

1. Level 1 - appropriate Level 1 may be "Geographic Area's", "Project Area's", "Client's", "Catchment Area's" etc.
2. Level 2 - in the case of Level 2 "Water Quality Data", "Weather Station Data", or a specific project within an area would be appropriate.
3. Level 3 - the name or identification code relating to a particular monitoring site or location e.g. monitoring station name.
4. Level 4 - the date of a Sample Event. A Sample Event is an occurrence of sampling on a particular day. Each Sample Event consists of data relating to the variables measured. The sample database supplied with DataSight comes configured with some common variables. . .



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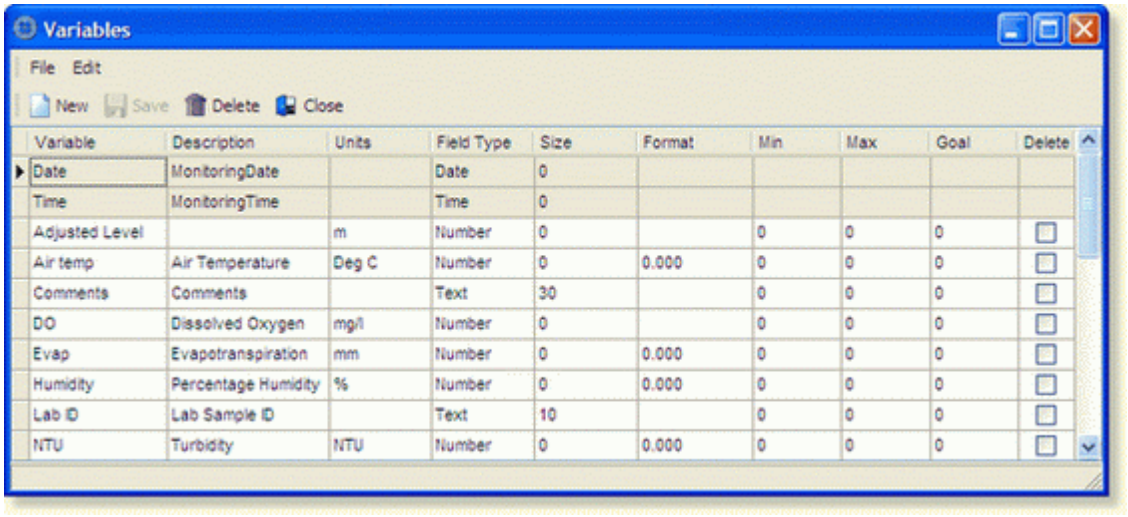
5.2 Quick Tour: Database Variables

When you are ready to create your **own** database - simply add your own variables to customize the DataSight database. The DataSight variables correspond to the field names of the data that you will be adding or importing. When you add a variable you can define its unit of measurement, type, size and format. (see 7.4 Adding and Updating Variables).



Variable	Description	Units	Field Type	Size	Format	Min	Max	Goal	Delete
Date	MonitoringDate		Date	0					
Time	MonitoringTime		Time	0					
Adjusted Level		m	Number	0		0	0	0	☐
Air temp	Air Temperature	Deg C	Number	0	0.000	0	0	0	☐
Comments	Comments		Text	30		0	0	0	☐
DO	Dissolved Oxygen	mg/l	Number	0		0	0	0	☐
Evap	Evapotranspiration	mm	Number	0	0.000	0	0	0	☐
Humidity	Percentage Humidity	%	Number	0	0.000	0	0	0	☐
Lab ID	Lab Sample ID		Text	10		0	0	0	☐
NTU	Turbidity	NTU	Number	0	0.000	0	0	0	☐

Note: Laboratory data that contains or may contain a prefix such as "<" to denote that measured value is below detection limits should be mapped to an appropriate variable with the field type set as TEXT.

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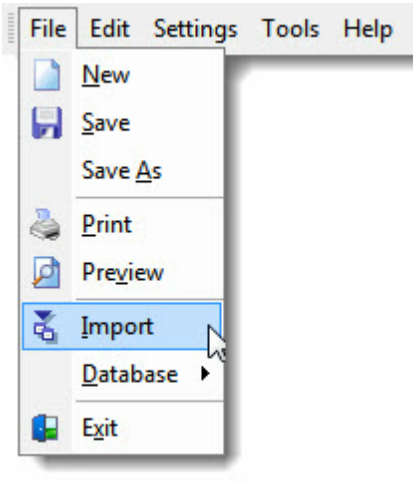
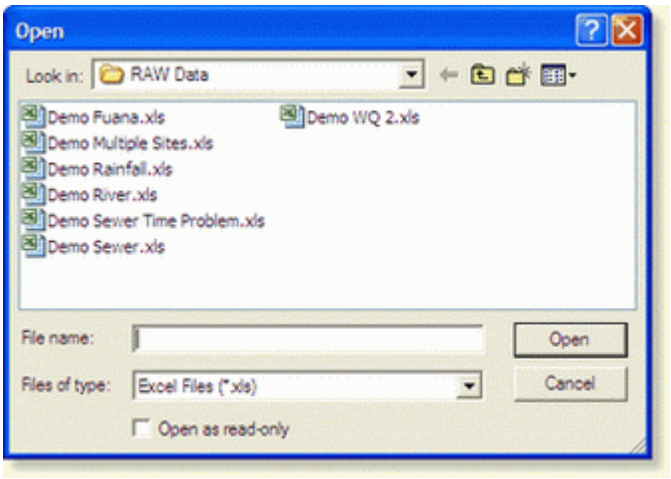
5.3 Quick Tour: Importing Data

Now you are ready to import your data using DataSight's Import wizard.





Just select your existing data file. In this example it is a spreadsheet.

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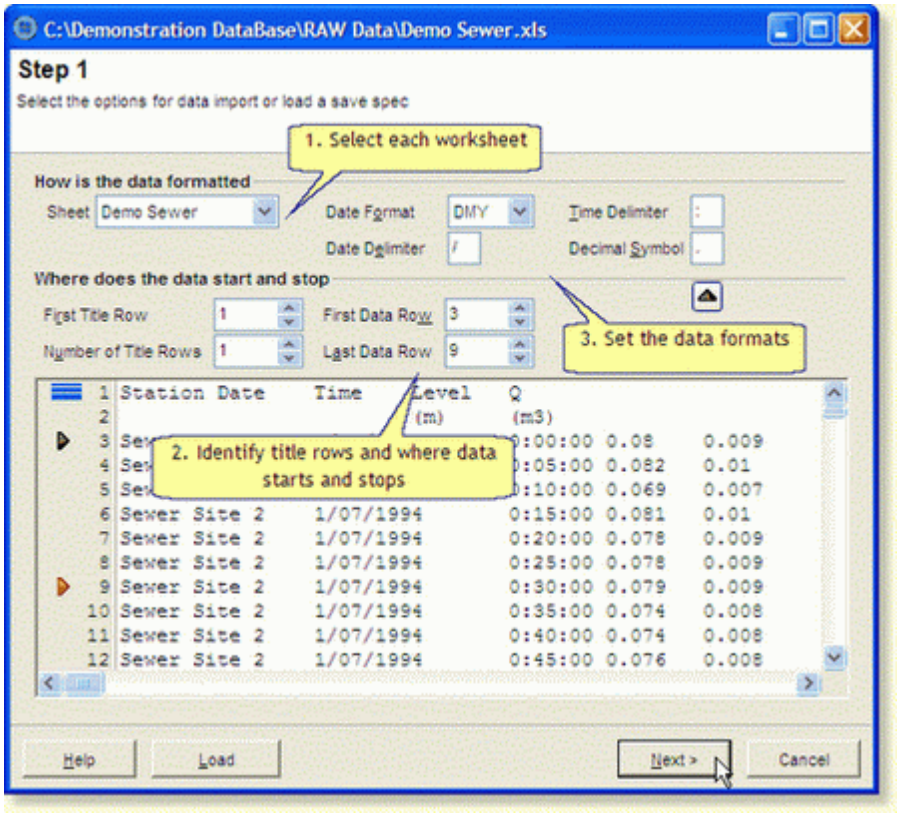
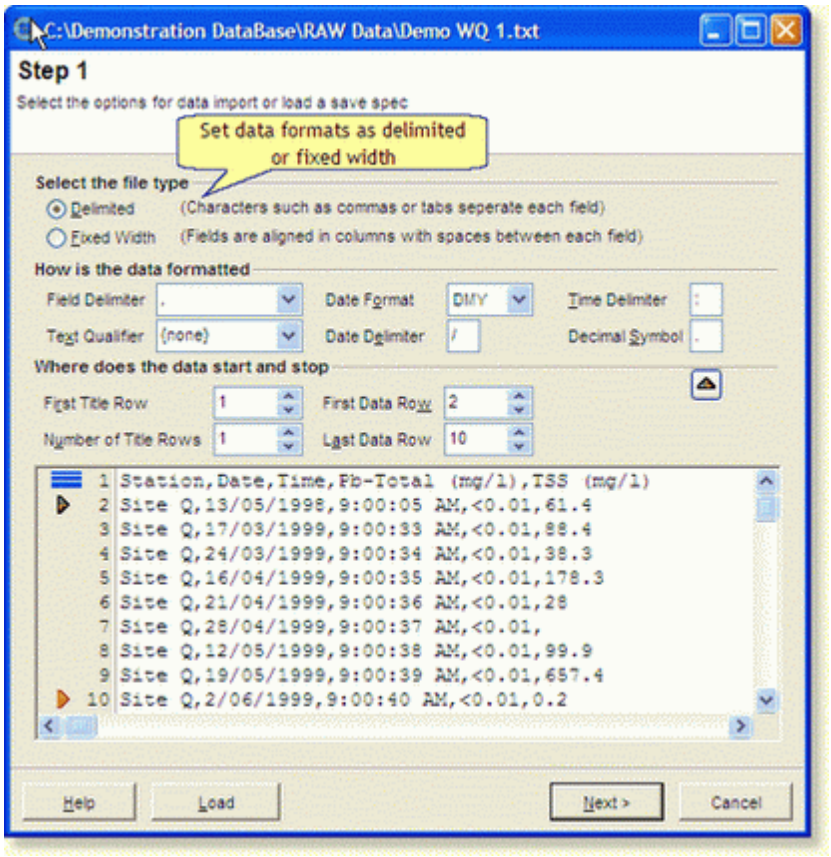
Then set the data formats and where the data to be imported starts and stops, before selecting **Next**.


C:\Demonstration DataBase\RAW Data\Demo Sewer.xls
Step 1
Select the options for data import or load a save spec
1. Select each worksheet
How is the data formatted
Sheet Demo Sewer
Date Format DMY
Time Delimiter :
Date Delimiter /
Decimal Symbol .
Where does the data start and stop
First Title Row 1
First Data Row 3
Number of Title Rows 1
Last Data Row 9
3. Set the data formats
2. Identify title rows and where data starts and stops
Station Date Time Level (m) Q (m3)
Sewer Site 2 1/07/1994 0:15:00 0.081 0.01
Sewer Site 2 1/07/1994 0:20:00 0.078 0.009
Sewer Site 2 1/07/1994 0:25:00 0.078 0.009
Sewer Site 2 1/07/1994 0:30:00 0.079 0.009
Sewer Site 2 1/07/1994 0:35:00 0.074 0.008
Sewer Site 2 1/07/1994 0:40:00 0.074 0.008
Sewer Site 2 1/07/1994 0:45:00 0.076 0.008
Help
Load
Next >
Cancel

In this example we are importing a spreadsheet but you can also import text files - both delimited and fixed width along with may different raw data logger files.


C:\Demonstration DataBase\RAW Data\Demo WQ 1.txt
Step 1
Select the options for data import or load a save spec
Set data formats as delimited or fixed width
Select the file type
Delimited (Characters such as commas or tabs seperate each field)
Fixed Width (Fields are aligned in columns with spaces between each field)
How is the data formatted
Field Delimiter ,
Date Format DMY
Time Delimiter :
Text Qualifier (none)
Date Delimiter /
Decimal Symbol .
Where does the data start and stop
First Title Row 1
First Data Row 2
Number of Title Rows 1
Last Data Row 10
Station,Date,Time,Pb-Total (mg/l),TSS (mg/l)
Site Q,13/05/1998,9:00:05 AM,<0.01,61.4
Site Q,17/03/1999,9:00:33 AM,<0.01,88.4
Site Q,24/03/1999,9:00:34 AM,<0.01,38.3
Site Q,16/04/1999,9:00:35 AM,<0.01,178.3
Site Q,21/04/1999,9:00:36 AM,<0.01,28
Site Q,28/04/1999,9:00:37 AM,<0.01,
Site Q,12/05/1999,9:00:38 AM,<0.01,99.9
Site Q,19/05/1999,9:00:39 AM,<0.01,657.4
Site Q,2/06/1999,9:00:40 AM,<0.01,0.2
Help
Load
Next >
Cancel

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In the above image a **txt** file is being imported. The user needs to select either **delimited** or **fixed width** format for the file type.

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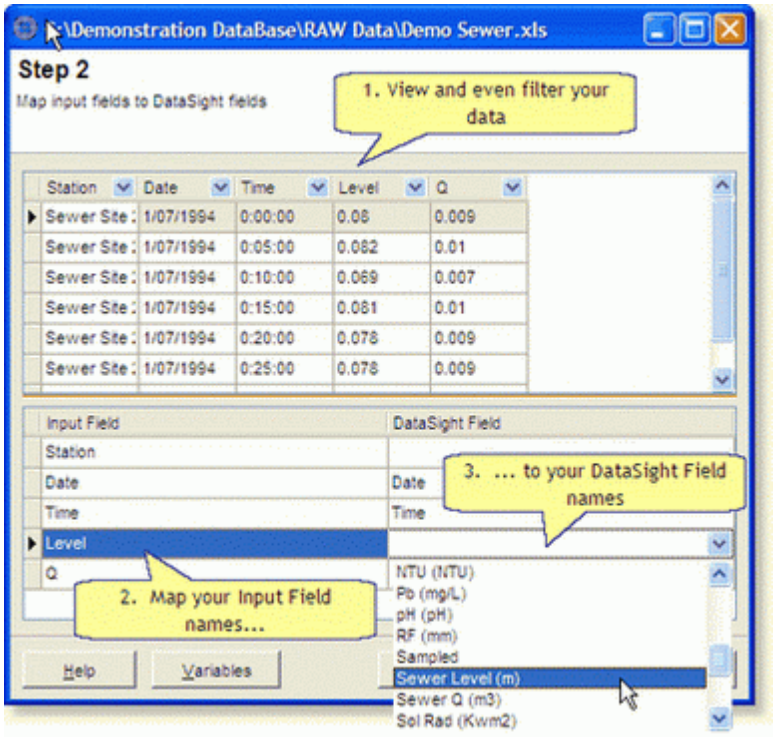
Map the spreadsheet fields to your DataSight database fields.



You may need to add Datasight Field Variables to match the Input Field: Click the **Variables** button and follow the steps under Quick Tour: Database Variables.

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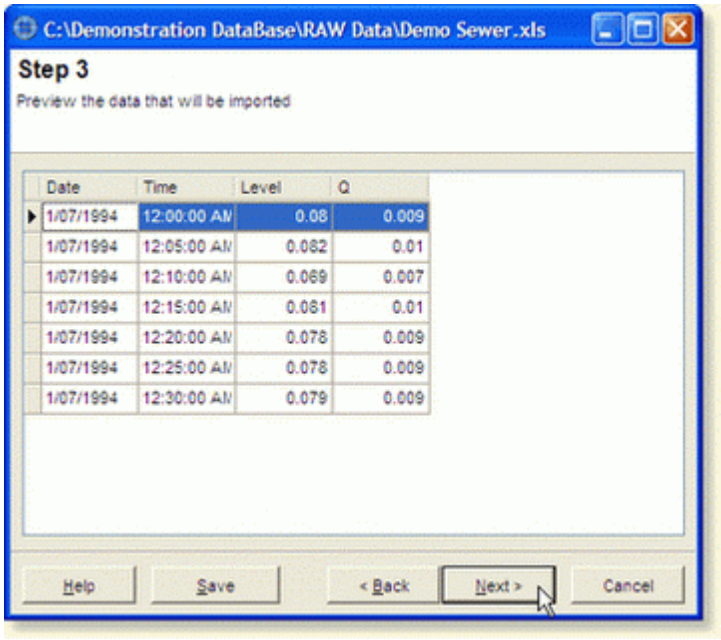
You can preview what your data will look like once it is imported. Then select next to continue...



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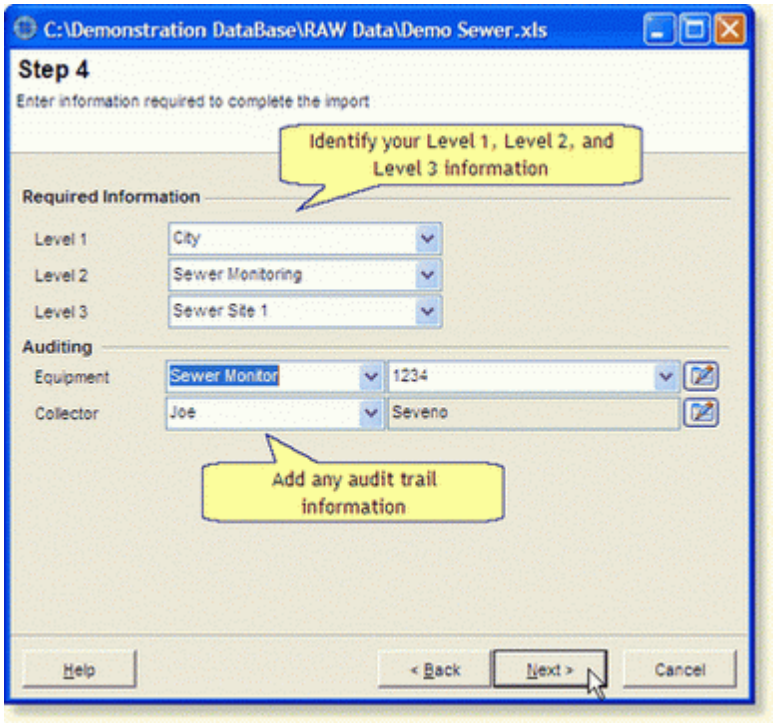
Add your Level information. You can also add audit trail information. Click next...



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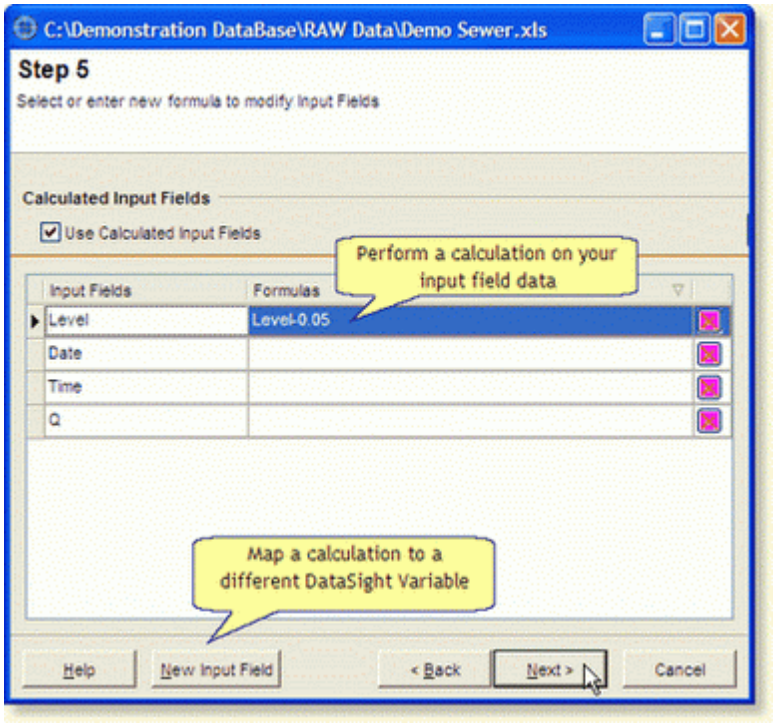
Perform simple calculations on your Input Fields.



Tick the box above the Input Fields to perform a conversion on your input data.

You may also add New Input Fields to store the calculated data in a separate Variable Field from that of the raw data.

Once the conversion has been completed DataSight will remember the conversion and will deliver the last formulae used.

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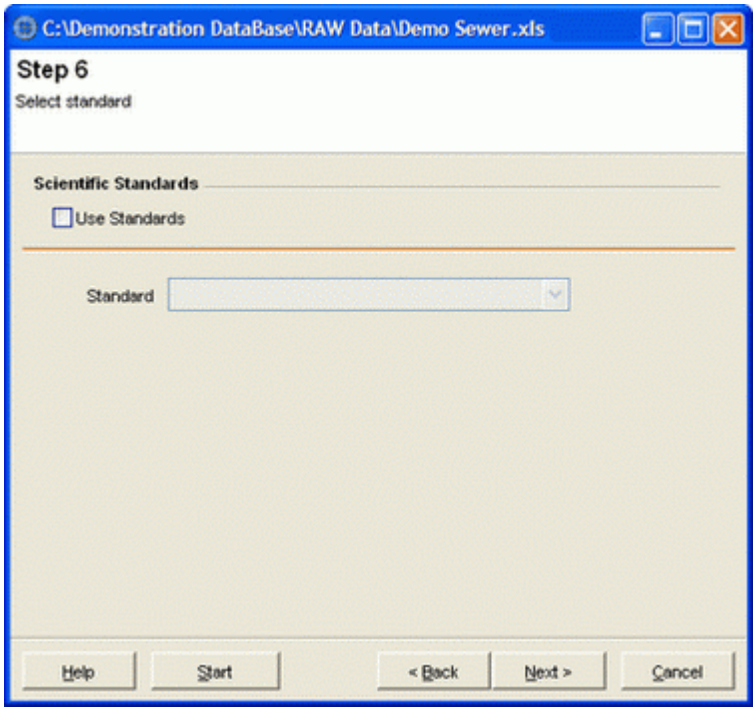
Standards are used to implement Min and Max settings for variables.



Use the drop-down menu to select the desired Standard

Click Next and you're done.

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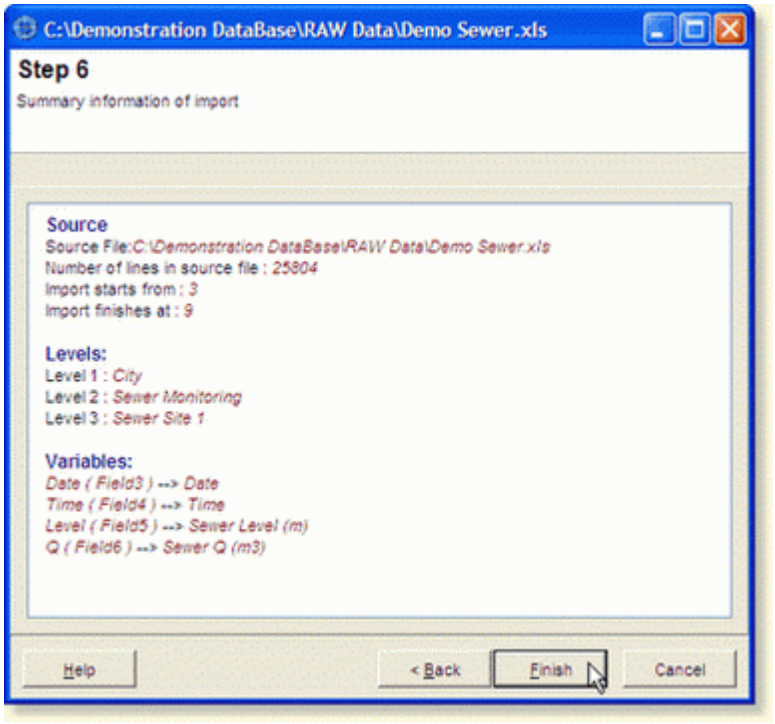
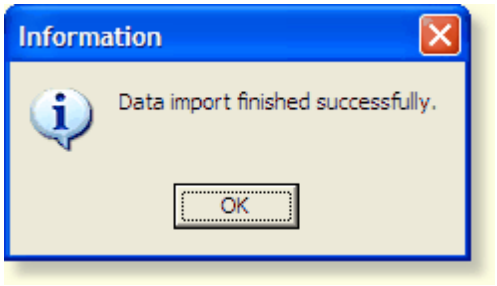
You can check the Import Summary Information page before proceeding with the import.


C:\Demonstration DataBase\RAW Data\Demo Sewer.xls
Step 6
Summary information of import
Source
Source File:C:\Demonstration DataBase\RAW Data\Demo Sewer.xls
Number of lines in source file : 25804
Import starts from : 3
Import finishes at : 9
Levels:
Level 1 : City
Level 2 : Sewer Monitoring
Level 3 : Sewer Site 1
Variables:
Date (Field3) --> Date
Time (Field4) --> Time
Level (Field5) --> Sewer Level (m)
Q (Field6) --> Sewer Q (m3)
Help
< Back
Finish
Cancel



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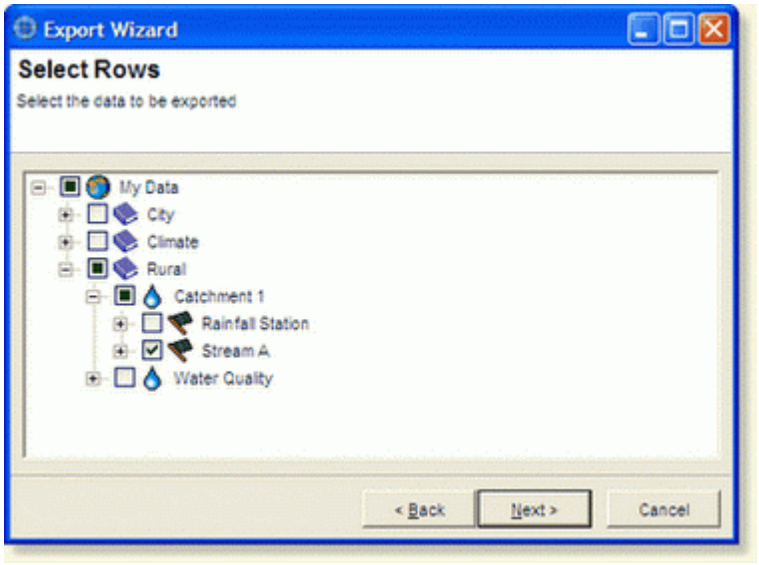
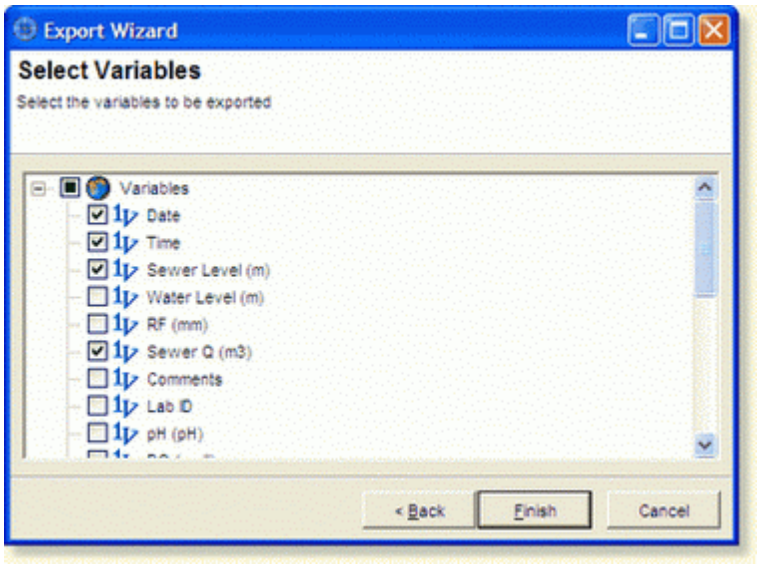
5.4 Quick Tour: Exporting Data

You can export all, or selected data, in a database format. Select the data you w ould like to export.



Note: The creation of a DataSight.dsd database file is NOT available in DataSight Enterprise. Data Export from the Enterprise version is direct from the data sheet.

Select some or all variable data . . .



If you select to "Send By Email"...

DataSight creates a zipped database ready for emailing.

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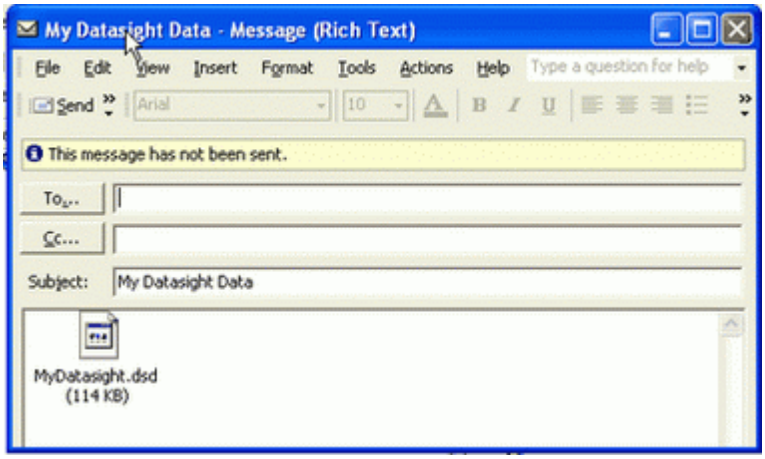
My Datasight Data - Message (Rich Text)
File Edit View Insert Format Tools Actions Help Type a question for help
Send Arial 10
This message has not been sent.
To...
Cc...
Subject: My Datasight Data
MyDatasight.dsd
(114 KB)

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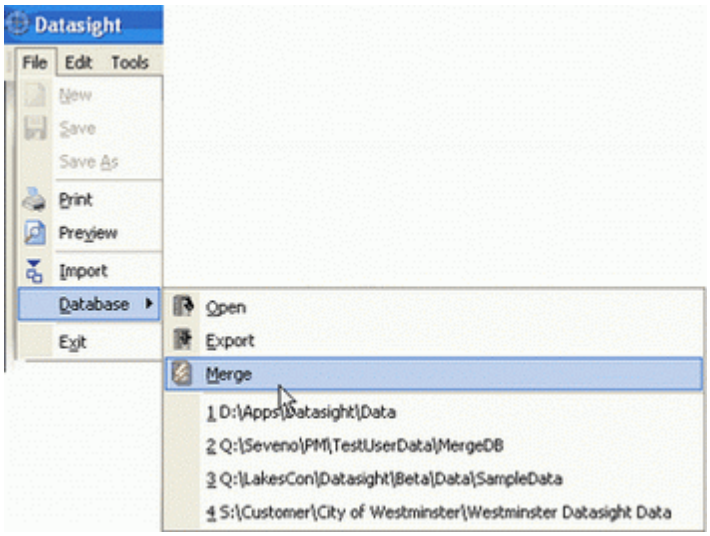
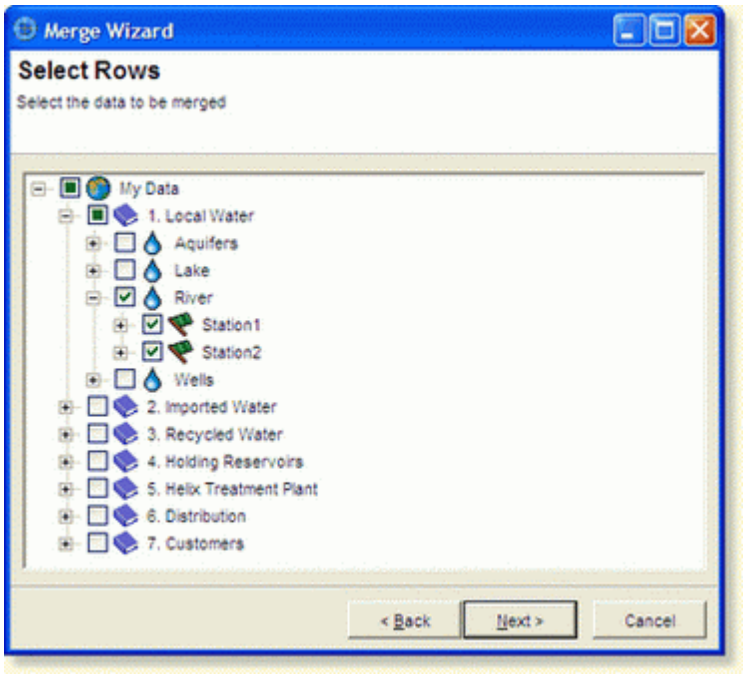
5.5 Quick Tour: Merge

You can also receive a DataSight database from another source and merge the data into your own database.



Select any or all of the data for merging - in this case the data for River.



Select the variable fields data to be merged and set the merge links.

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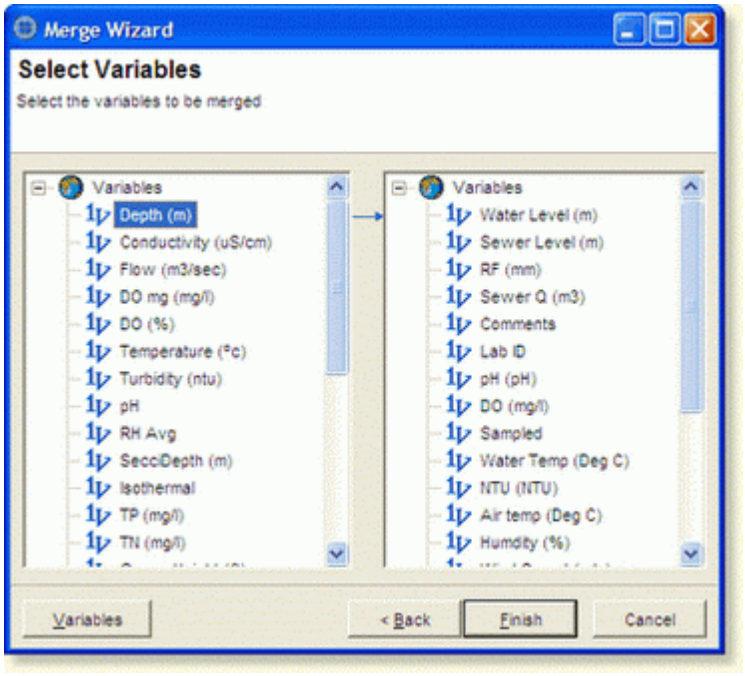

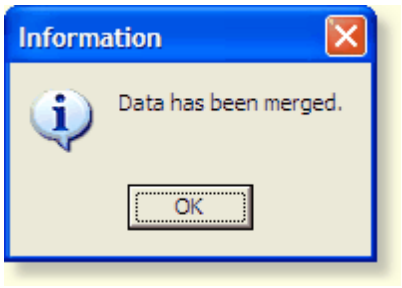

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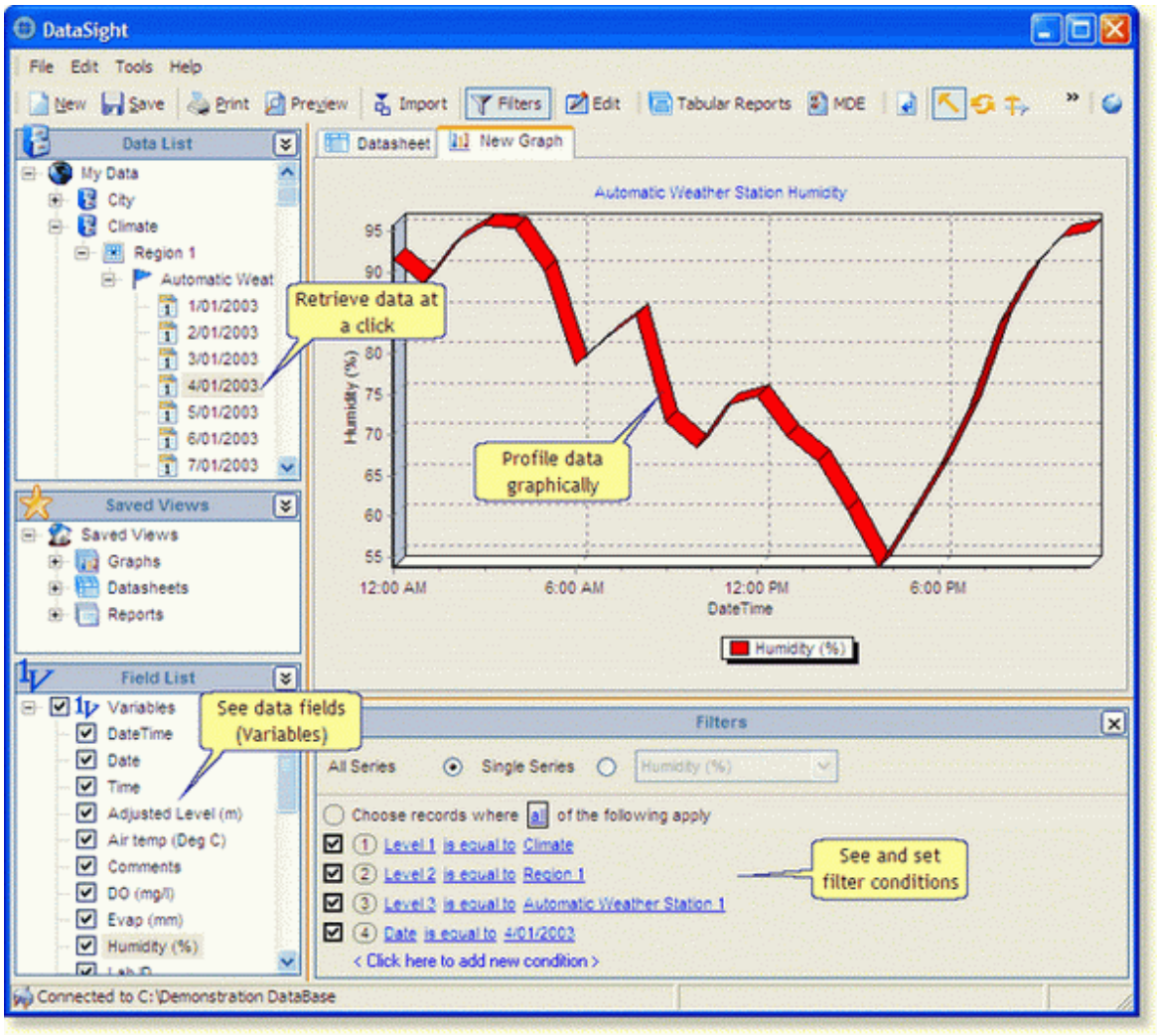
5.6 Quick Tour: Graphs

After your data is in DataSight you can retrieve it, view it, graph it and interrogate it.



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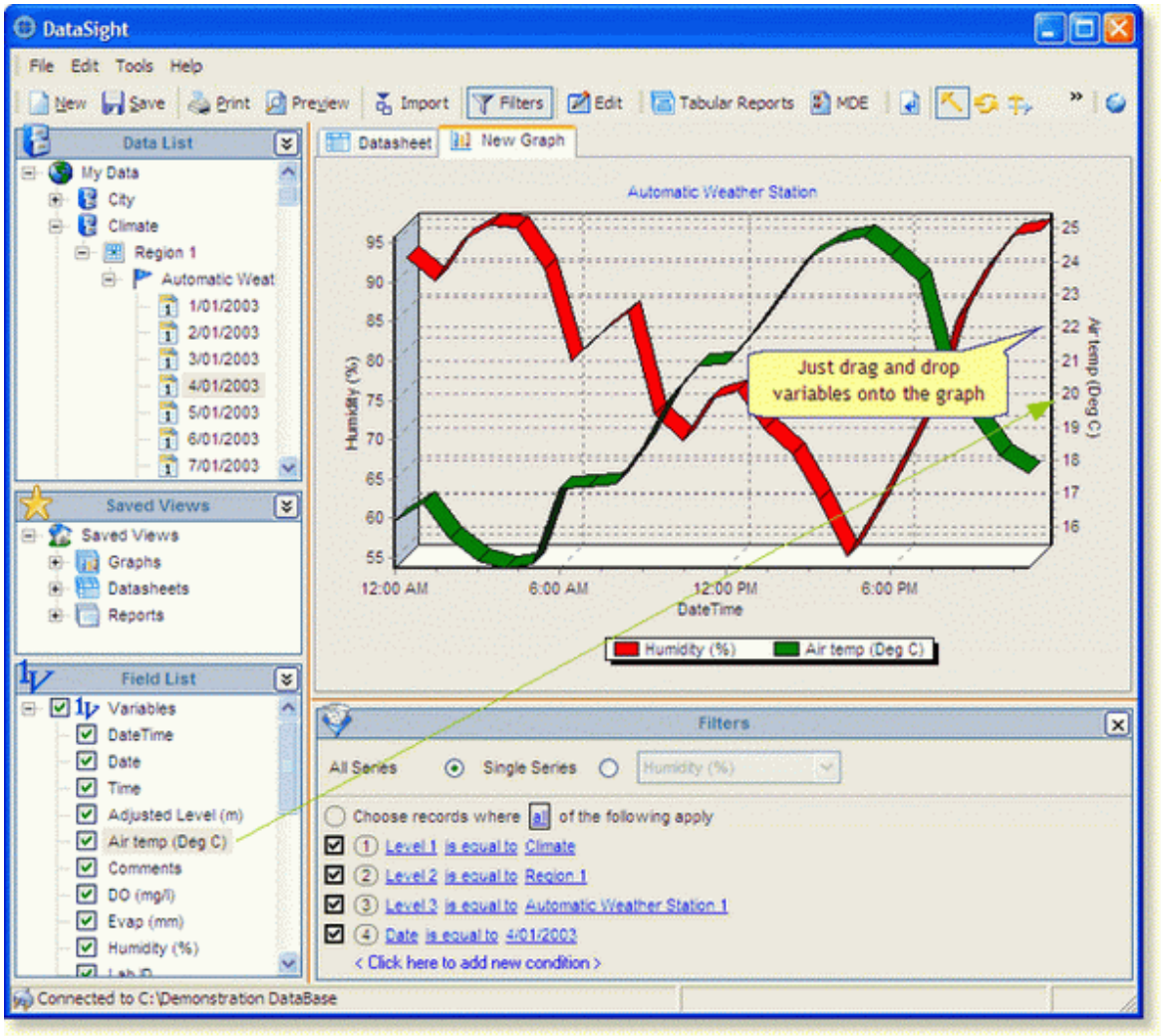
Especially powerful is the data profiling functionality. Just drag and drop data fields to use as axes or series onto the graph panel.

You have full control over the formatting of the graph including being able to stack graphs.



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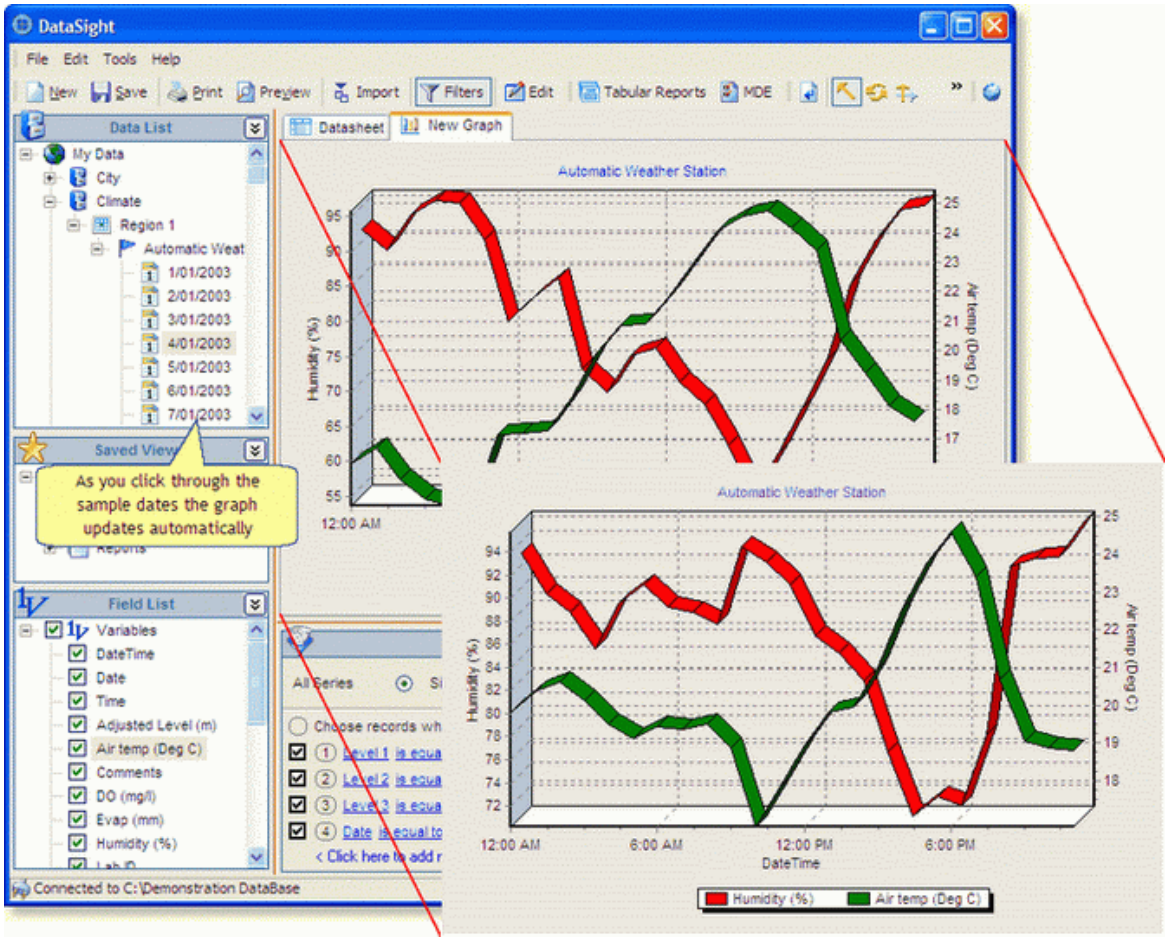
You can scroll up and dow n successive sample dates and the graph changes dynamically.



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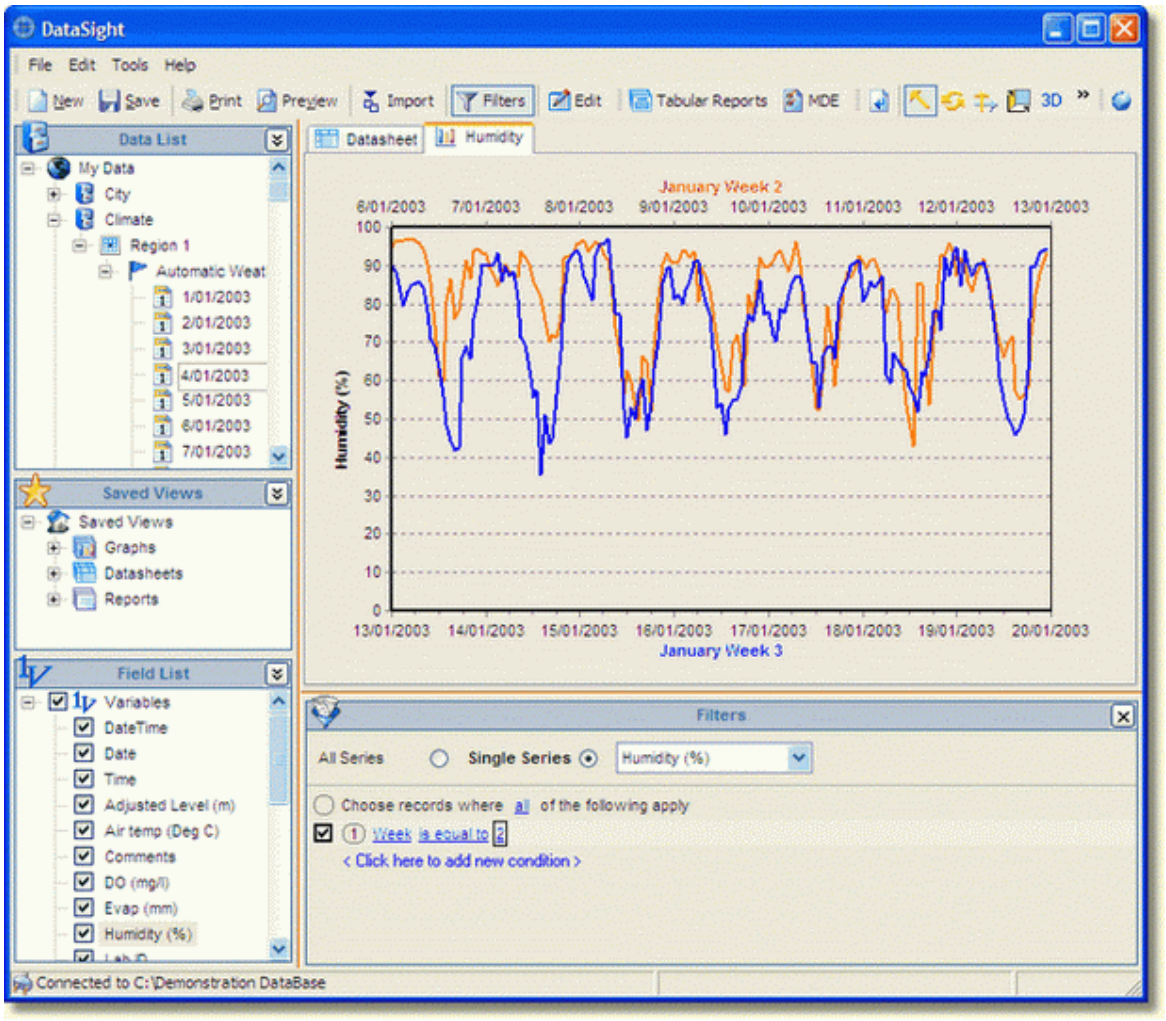
You can plot different series for comparison - in this example, overlay two different periods of Humidity data for a weather station.



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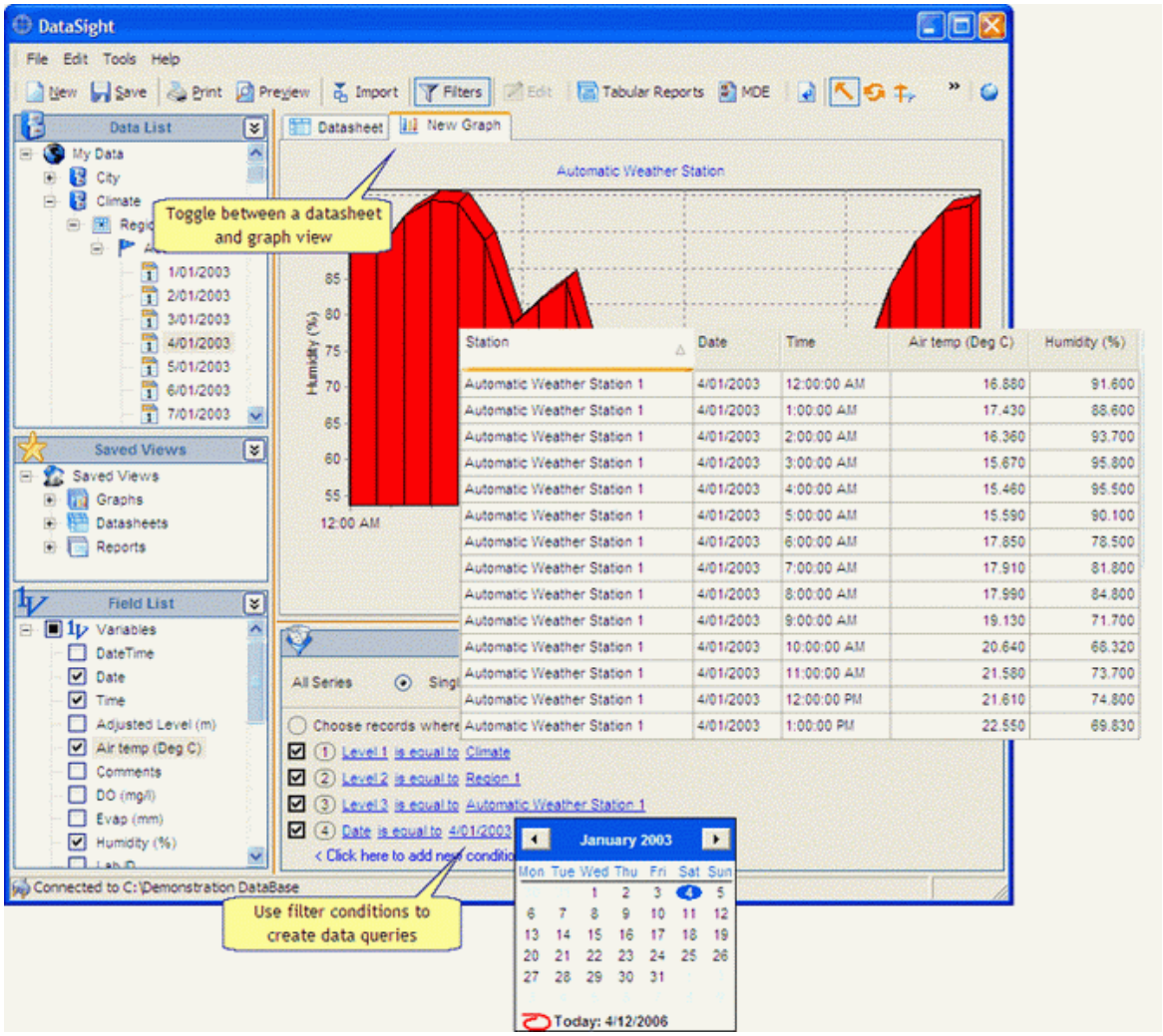
Use DataSight's filter function to construct data queries. See the results in tabular form or plot as a graph.



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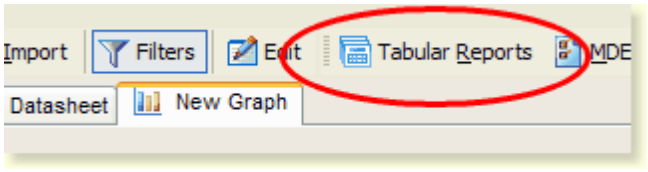
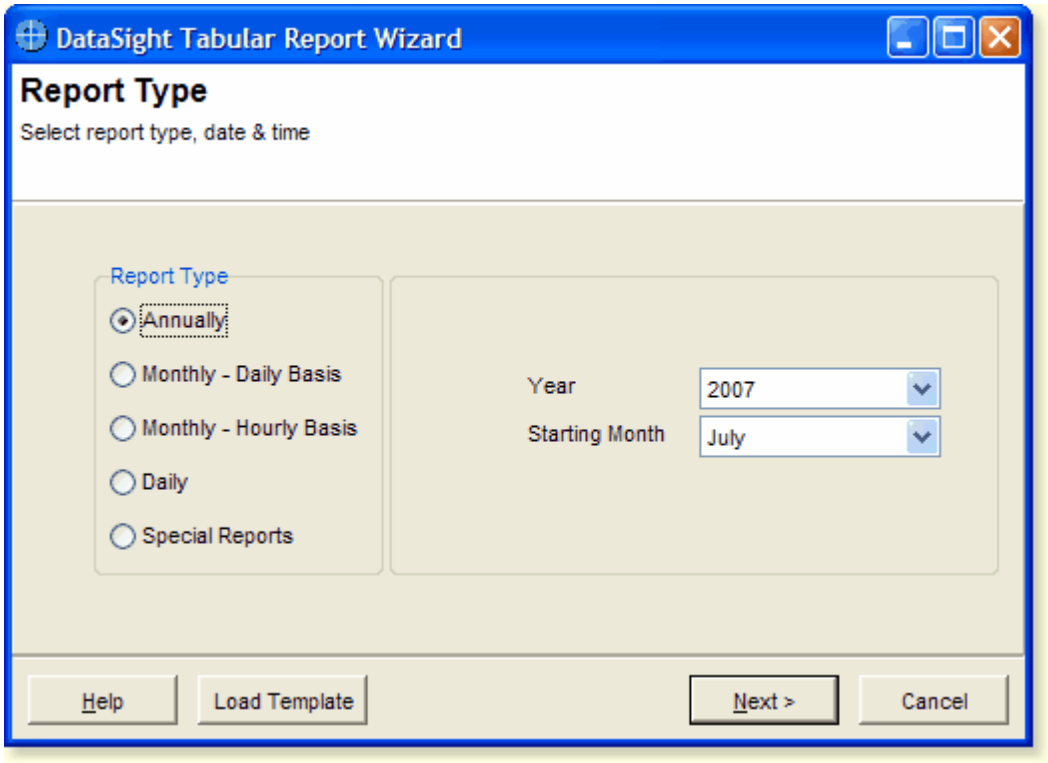
5.7 Quick Tour: Reports

Use Tabular Reports Wizard to create tabular report in a few clicks.

To start Tabular Report Wizard click button on the main menu.



Then select your report type and the report period depending on the report type you have selected.



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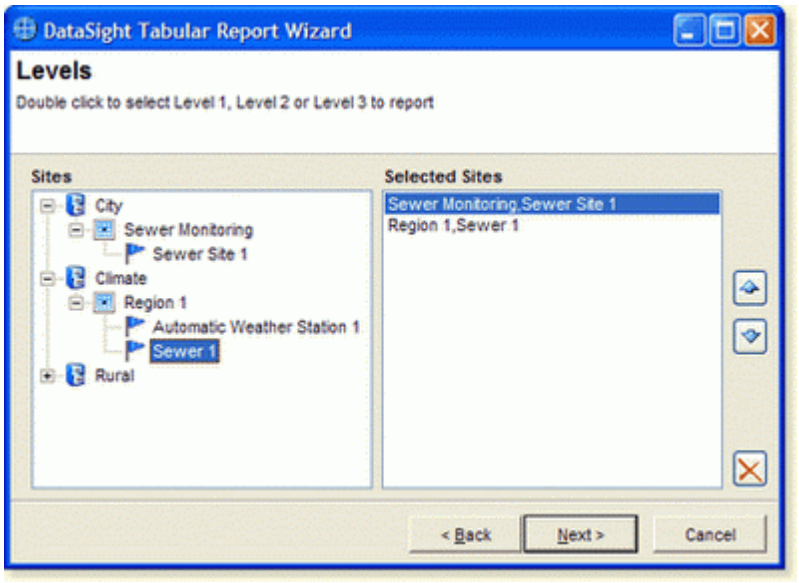
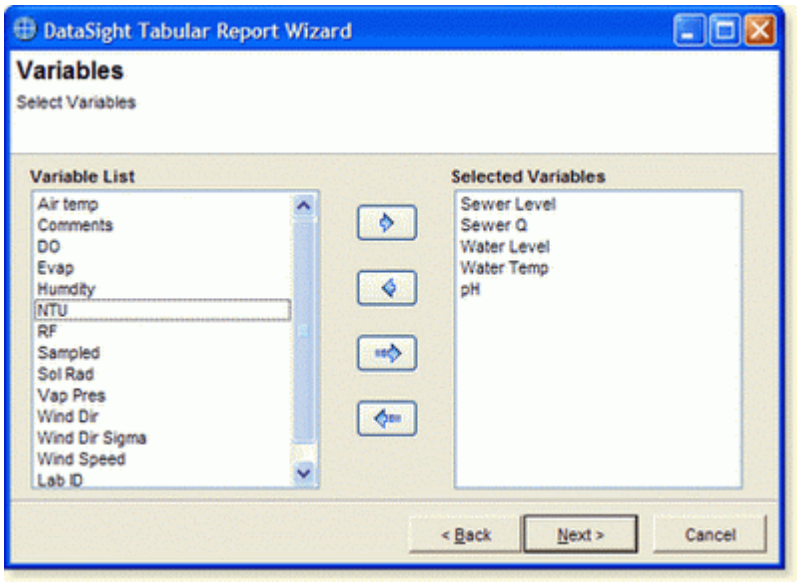
Select your data location (Level 3 information) to continue. You can select multiple station as well as selection same station more than once.



Next step is selection of Datasight variable(s) you wanted to add your tabular reports. You can double click on the variable you want to add the report or you can use buttons located between two combo boxes.



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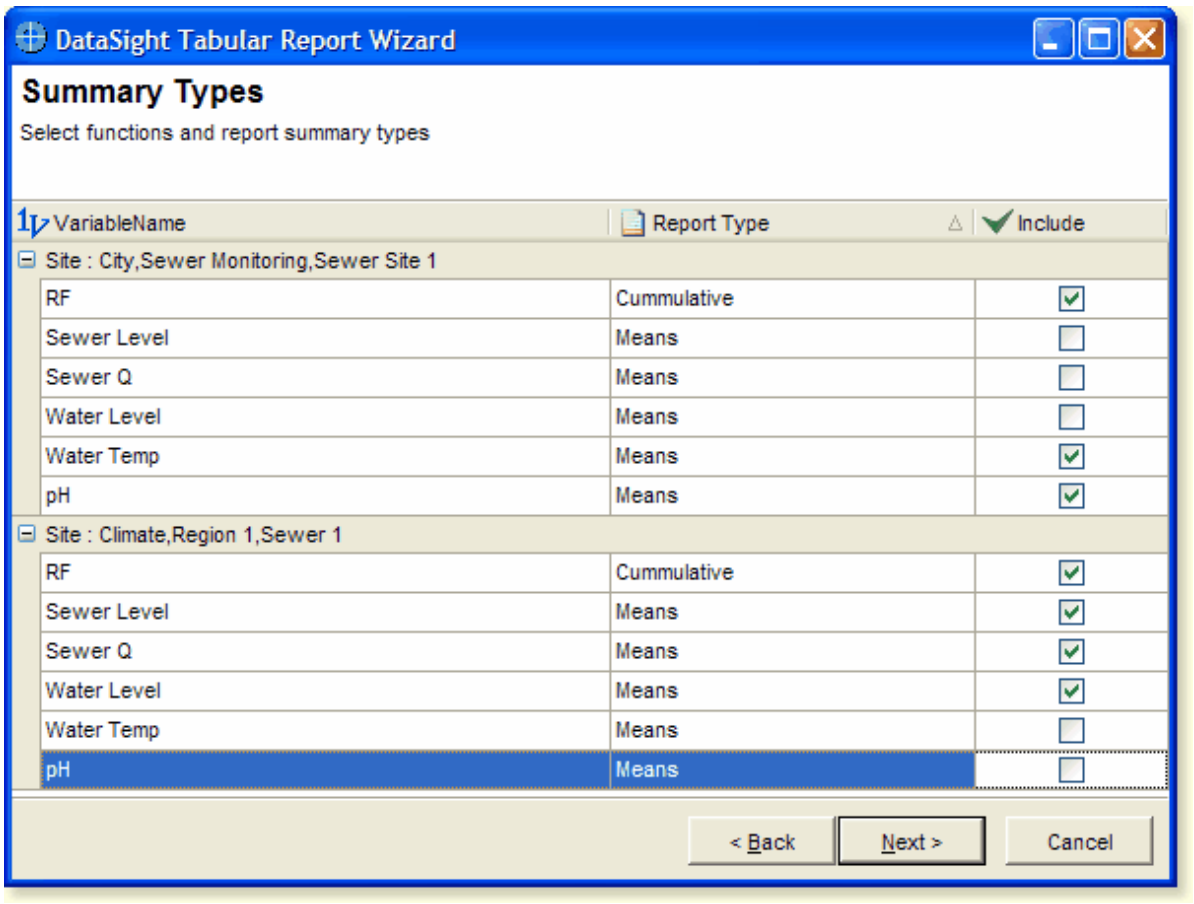
Your tabular report list is grouped by the Level 3 Information. Tabular Report Wizard will show you the list of all the combinations of the selected Levels and the variables. You may want to cancel or remove from the output by using the corresponding check box. You can also change the report type from Mean (Averages), Cumulative.



The final step is to select output type. You can send your report directly to the printer or you can save your report into different file formats like PDF, RTF etc.

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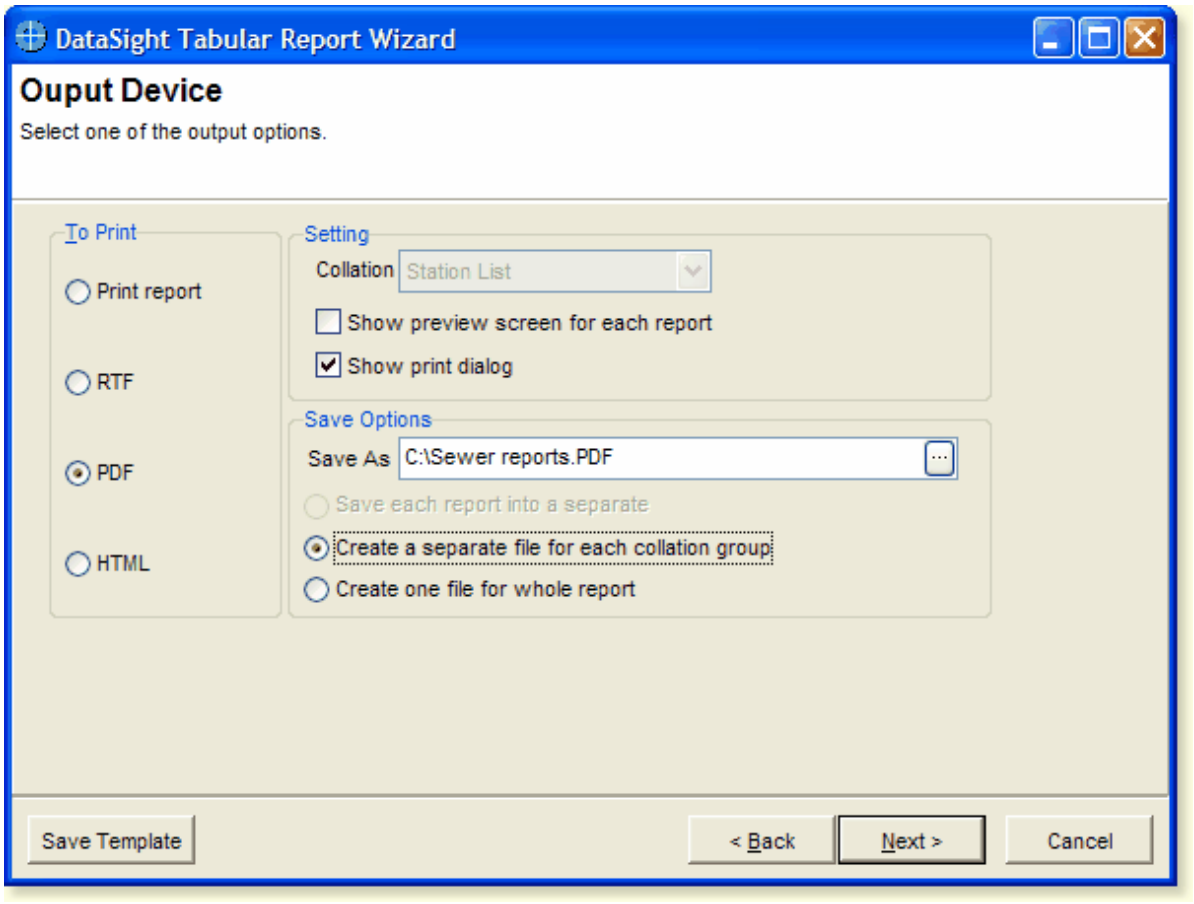
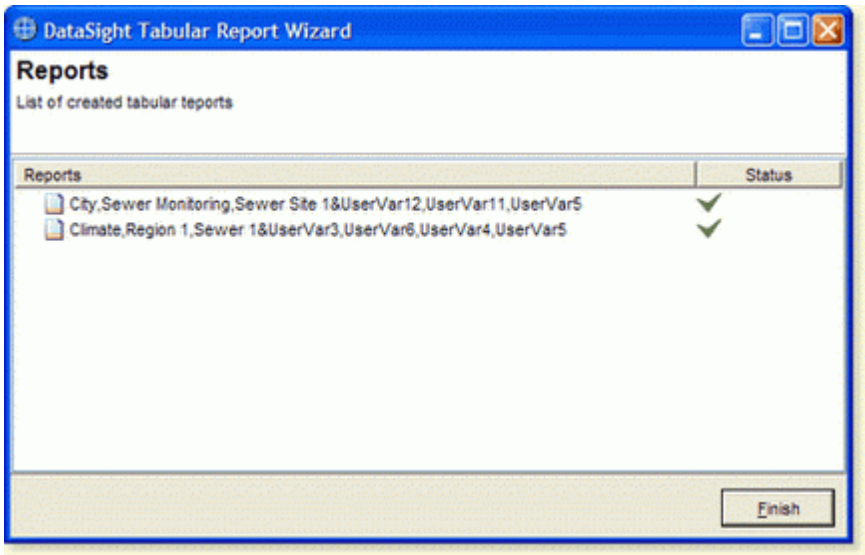


You can see a list of the printed or created reports on the last page of the wizard.



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5.8 Quick Tour: Notes

Thanks for taking the Quick Tour!

To summarise:

- DataSight is Seveno's flagship product, a platform for the management, graphing, communication and reporting of any natural resource data. DataSight handles information relating to any part of the sector - surface and groundwater, atmosphere, soil and others.
- Use the advanced power of DataSight to connect with or import data from acquisition systems such as probes, sensors, data loggers and laboratory instrumentation into a logical centrally-organized relational database. Legacy databases, spreadsheets, and existing data files can all be consolidated.
- DataSight has built in functionality to track audit trails, perform data validation, data interrogation and graphical profiling.
- With DataSight as a common data communication standard you can send and receive, share and merge data even if that data is structured differently. You can also output, report and publish data in a variety of formats including web-based.
- DataSight is GIS and ODBC compliant adding its own power to your GIS environment and preserving your investment in existing applications. DataSight is also structured to accept plug-in analysis modules such as Seveno's LakeWatch application.
- Easy scalability makes DataSight the perfect choice of organizational application. Whether supported by a desktop or an enterprise-wide database, DataSight connects the whole natural resources industry.

To download a fully functional evaluation copy of DataSight go to http://www.seveno.com

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6 Using this Guide

6.1 Who this Help file is for

This Help file is for anyone who is using DataSight Desktop, DataSight Enterprise or DataSight Lite. Some features change between products as noted throughout the help file.

6.2 If you are using DataSight Lite

DataSight Lite has fewer features than DataSight Desktop and Enterprise, but is free of charge. DataSight Lite can still be used to import, export and maintain data in a DataSight database and can be used after the 30 day evaluation period for DataSight has expired. However, not all the features described in the Help file will be available for DataSight Lite.

6.3 Typographical Conventions

Before you start using this Help File, it is important to understand the terms and typographical conventions used.

For more information on specialized terms used in the documentation, see the **Glossary**.

The following kinds of formatting in the text identify special information.

Formatting Convention	Type of Information
Numbered List	Step-by-step procedures. You can follow these instructions to complete a specific task.
Special Bold	Items you must select or interact with, such as menu options, command buttons or dialogue boxes.
Emphasis	Used to emphasize the importance of a point or for variable expressions such as parameters.
CAPITALS	Names of keys on the keyboard. For example, SHIFT, CTRL, or ALT.
KEY+KEY	Key combinations where you must press and hold down one key and then press another, for example, CTRL+P, or ALT+F4.

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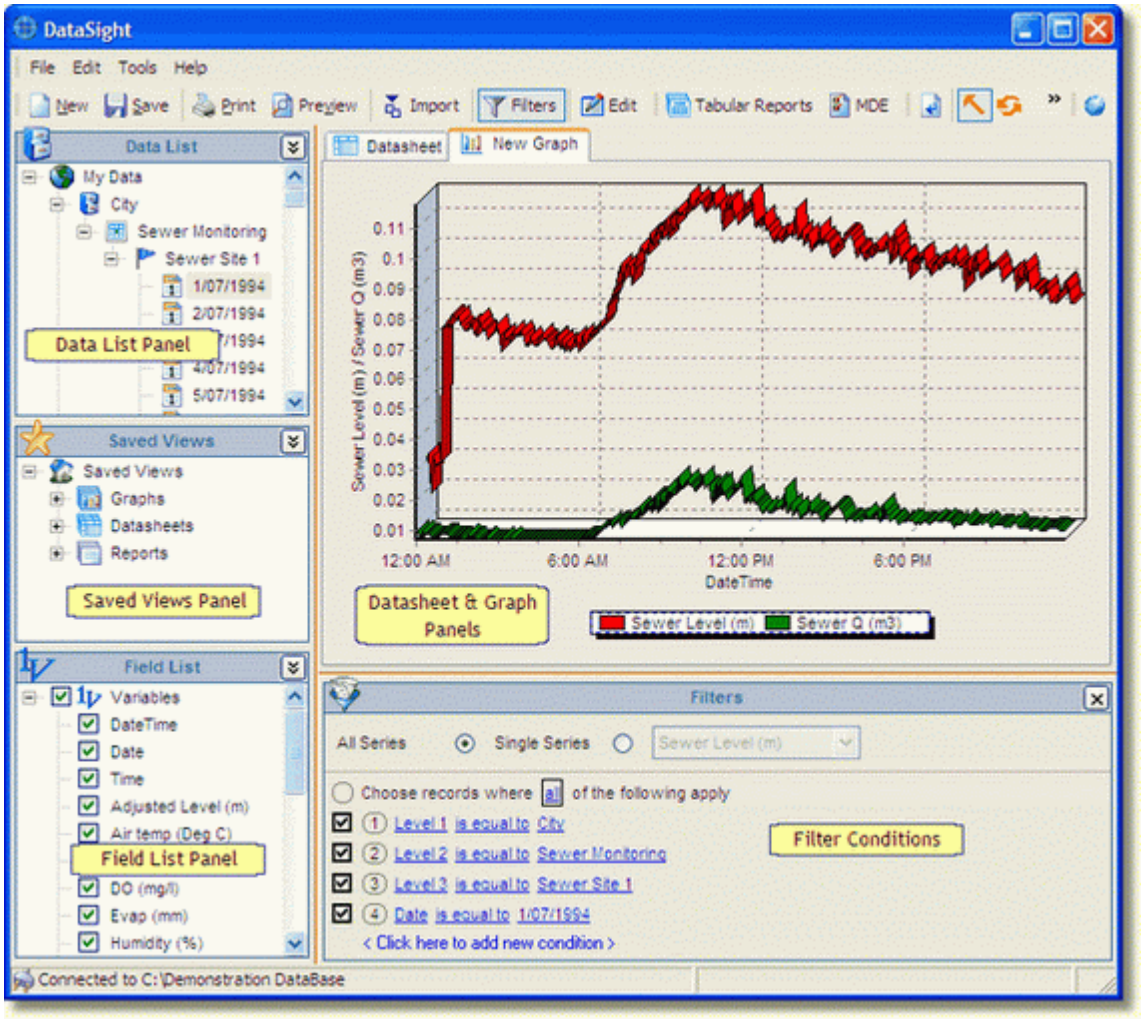
7 Getting Started

This chapter describes the work environment and the interface elements you will encounter while you are using DataSight.

7.1 Main Window Layout

The main DataSight window can be divided into 5 panels. The three panels to the left contain Data List, Saved Views, and Field List. The main panel contains two tabs allowing you to view the datasheet and graph (and also a saved report). The bottom panel contains the filters.



To expand your view of the left panels, datasheet/graph panel or filters, hover the cursor over any screen panel border. The cursor will change to then hold the left mouse button down to drag and drop the border of the screen panel.

To expand the data list, saved views, or field list windows vertically click on the panel header and drag to the desired height on screen.

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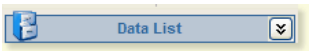
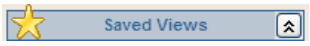
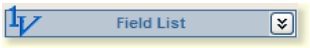
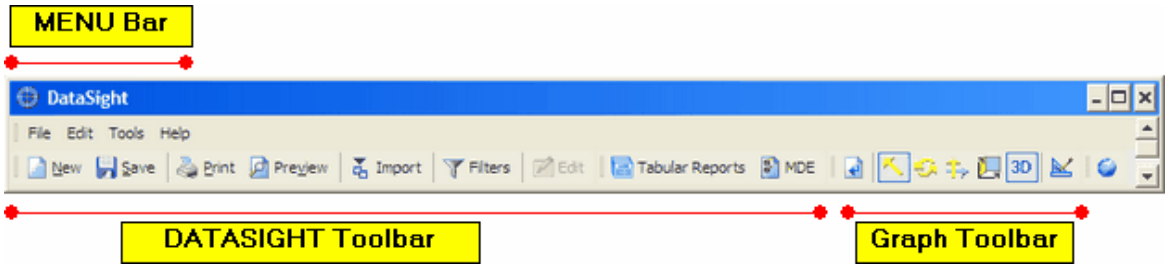
Panel	Controlled by	Function
Data List Panel	 Click the arrows to open and close the panel.	Displays a tree list view of your data in Levels 1, 2, 3 and 4.
Datasheet/Graph Panel	Click tabs to toggle between views.	Displays selected data in a Datasheet or Graph
Saved Views	 Click on the arrows to open and close the panel.	Displays a tree list view of the saved datasheets, graphs and imported reports.
Field List Panel	 Click the arrows to open and close the panel.	Displays the available variables in your DataSight database.
Filter Panel	Click on the DataSight Toolbar to toggle.	Displays the current Filters (conditions) applied to the selected data.

At the top of the main DataSight window is a Toolbar panel.

7.2 Toolbars

The Toolbar panel comprises



- The Menu Bar
- The DataSight Toolbar
- The Graph Toolbar

7.2.1 Menu Bar and DataSight Toolbar

Type	Description
Menu bar	The Menu bar is a special toolbar at the very top of the screen that contains the menus File, Edit, Tools and Help. Click any menu name in the bar to see a list of menu commands. Moving the cursor over any other menus will display the options

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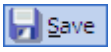
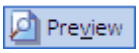
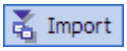
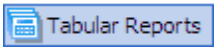
without having to click again. Click to select and execute any command. Any greyed out menu command indicates that it is not available.

DataSight Toolbar — The DataSight toolbar, below the menu bar provides shortcuts to the DataSight functions that you will use most often.

DataSight Button	Function
	Opens a new blank graph when the Graph tab is active or adds a new record when the Datasheet tab is active for a Level 3.
	Allows the naming and saving of the current Graph or Datasheet.
	Prints either the DataSheet or Graph depending on which tab is active.
	Previews the print of either the Datasheet or the Graph depending on which tab is active. From the Preview dialogue box you can change the Page Setup.
	Activates the Import Wizard which will step you through the import process.
	Toggles the display of current Filters (conditions) applied to the selected data.
	Allows you to edit data when the Datasheet tab is active.
	Tabular reports opens a report wizard window allowing you to generate tabular reports over varying time frames.
	MDE stands for Manual Data Entry. By clicking on this icon you can access an electronic form for data entry. The parameters entered are chosen so that you can build and save electronic forms to match field data sheets.

7.2.2 Graph Toolbar

The Graph Toolbar to the right of the DataSight Toolbar provides shortcuts to the view and presentation formats of your graph.

Button	Function
	Resets the normal graph view.
	Restores the cursor to Normal functionality. In Normal mode, zoom is enabled
	Enables the graph to be rotated by dragging up and down and left and right.
	Enables the graph to be moved up and down and left and right.

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Enables the depth of the graph to be increased/decreased by dragging left or right. (3D must be enabled before this option is active).

Toggles a 3D perspective on and off.

Opens the Graph Properties dialogue box.

7.2.3 Floating and Docking a Toolbar

1. Click in any part of the grey area in the toolbar, then
2. Keeping your finger on the mouse button, drag and drop the toolbar to a new location where it will float.

or

3. Drag and drop the toolbar to the extreme right or left of the screen to dock it on that side.

If the toolbar is floating, double clicking the Title Bar at the top of the toolbar panel will restore it to its previous docked location.

7.3 Right click menus

DataSight provides right-click menus for accomplishing your most common and frequently used tasks. The options displayed on the right-click menu vary depending on where you are when you click.

7.4 Security

The Security feature is imposed by way of a password on the DataSight database. This is first allocated by the user called *Admin* who is always a member of the Admin Group. Only the *Admin* User has this power in addition to the general Admin Group powers. For this reason you are prohibited from deleting the *Admin* User.

DataSight comes with 2 default User Groups: Admin and User. While both Groups can have access to the database, only members of the Admin group can set up and maintain Groups and Users. For this reason, we recommend that you restrict membership of the Admin Group to just the default *Admin* User in order to better control the integrity of the system. Despite this, you may still add other members of the Admin Group if you wish.

The Security features in DataSight are implemented in this hierarchical order:

1. **The Admin User in the Admin Group**

   Who can toggle the Security feature on the DataSight database by allocating an *Admin* User password. If that password is subsequently deleted, Security is toggled off and access to the database will remain unrestricted unless, and until, another password is allocated by someone logged in as the *Admin* User. If no Security is turned on, the default login is the *Admin* User.

2. **Members of the Admin Group**

   Who can:

   Toggle off security by clearing the *Admin* User password

   Add and Delete Groups

   Add and Delete Users

   Assign Users to Groups

   Clear any User passwords (including the *Admin* User's)

3. **Users**

   Who can Add or Change their own passwords

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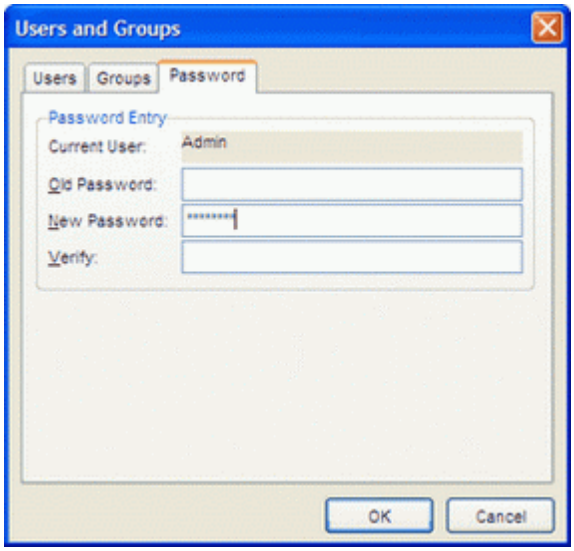
7.4.1 Setting Security

Setting up Security for the first time

The first time that DataSight Security features are set up, the user doing the setup is recognized as having the default user name of *Admin* which is the only existing member of the Admin Group. The *Admin* User toggles the DataSight Security feature on at the highest level by allocating an *Admin* User password. If that password is subsequently deleted, Security is toggled off and access to the database will remain unrestricted unless, and until, another password is allocated by someone logged in as the *Admin* User.

Allocating a Security password

1. Click Tools, Security, Accounts on the main menu.
2. The Users and Groups dialogue box opens.
3. Click the Password tab and note that the current user is *Admin*.



4. Type a password in the New Password field then type it again in the Verify field and click OK.
5. That password will then be required for the *Admin* User the next time that DataSight is opened.

Passwords are attached to Users and are not case sensitive.

Group Privileges override individual privileges. Individual users will continue to have a specific group's privileges even if the group has been deleted. All users should be transferred to a new group is a group is deleted.

7.4.2 Admin Group permissions

DataSight comes with two default User Groups Admin and User. There is one existing default member of the Admin Group (the user called *Admin*).

While both the Admin and User Groups can have access to the database, only members of the Admin group can set up and maintain Groups and Users. For this reason, we recommend that you restrict membership of the Admin Group to just the default *Admin* User in order to better control the integrity of the system. Despite this, you may still add other members of the Admin Group if you wish.

Admin Group Users can

Add and Delete Groups

Add and Delete Users

Assign Users to Groups

Clear any User passwords (including the *Admin* User's)

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7.4.2.1 Adding and maintaining Groups and Users

You must be a member of the Admin Group to maintain Groups and Users

Groups

1. Click Tools, Security, User Accounts on the main menu.
2. The Users and Groups dialogue box opens.
3. Click the Groups tab.
4. Click the Name drop-down box to view list of existing Groups.
5. Selecting any Group will display a list of members in the panel below.

then,

To Add a Group

6. Click New and the Add Groups dialogue box appears.
7. Type in a Group name and click OK.

or,

To Delete a Group

Select a Group

8. Click Delete
9. If the Group has members, a warning message will appear asking for confirmation of the Delete.
10. If the Delete is confirmed, any members will be unallocated from the Group and the Group will be deleted.

Users and their membership of Groups

Maintain Users

1. Click Tools, Security, Accounts on the main menu.
2. The Users and Groups dialogue box opens.
3. Click the Users tab.
4. Click the Name drop-down box to view a list of existing Users.

Then,

Add a New User

1. Click the New button and the Add User dialogue appears.
2. Type in a User name.
3. Allocate a password to a User at this stage by typing in a password in the password field and again to verify. You can also leave the password field blank.
4. Click OK.

Then,

Adding or Removing a User to or from a Group

1. By default, new users are added to the User group but you can also add them to any other Group(s).
2. With the Users tab active, select the user name from the Name drop-down box.

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3. Select the relevant Group from the Available Groups list.
4. Click the Add or Remove button. Alternatively, the Clear button will clear the user from membership of all Groups.

7.4.2.2 Clearing User passwords

Any member of the Admin Group can clear any User password including that of the *Admin* User.

1. Click Tools, Security, Accounts on the main menu.
2. The Users and Groups dialogue box opens.
3. Click the Users tab.
4. Click the Name drop-down box to view a list of existing Users.

then,

5. Click to select the relevant user.
6. Click the Clear Password button.
7. A confirmation dialogue appears, click Yes.

7.4.2.3 Adding User passwords

Any user can add or change their password.

1. Click Tools, Security, Change Password.
2. The Change Password dialogue box opens.

then,

To add

3. Leave the Old Password field blank and type in a password in the New Password and Verify fields.

or,

To change an existing password

4. Type the old password in the Old Password.
5. Type the new password in the New Password and Verify fields.
6. Click OK.

7.4.2.4 Setting User permissions within DataSight Enterprise

DataSight Enterprise has added security features. The access permissions are the final stage in setting up security on your database.

The Administrator or Users within the Admin Group can allocate access to specific areas within DataSight Enterprise.

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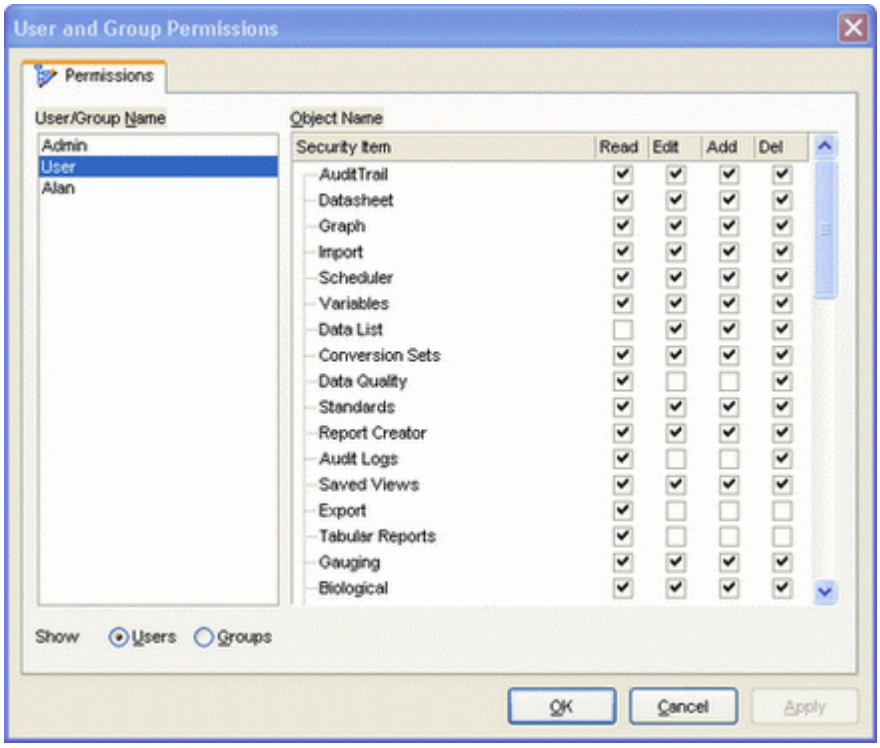
1. Click Tools, Security, Permissions on the main menu.
2. The Users and Group Permissions dialogue box opens.



3. Click the User or Group in the User/Group Name window.
4. Set the permissions in the Object Name window by ticking the appropriate check boxes.

The Administrator should NEVER release the Admin User Name and Password as the Admin User Name and Password are identical for Microsoft SQL Server. The users should be provided separate passwords. The users will retain the last group privileges that they have been allocated even if the group has been deleted. All users should be allocated to groups.

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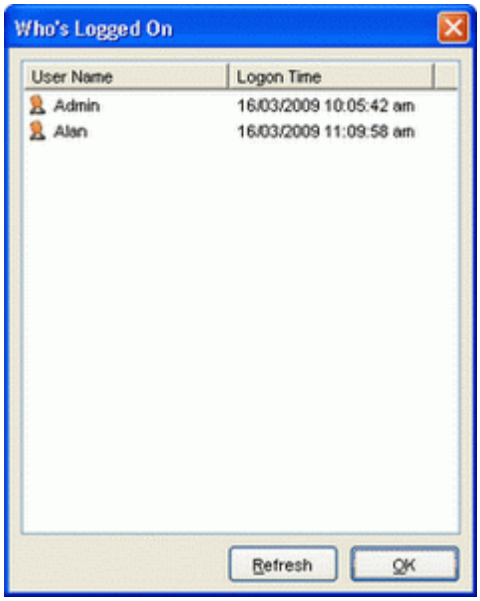
7.4.3 Who's Logged On

You can identify any current users of a DataSight database by selecting **Security** > **Who's Logged On** from the **Tools** menu.

This window displays the User Name and Logon Time of those currently using the database.



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8 Setting up the DataSight Database

Before importing or entering data into the DataSight database you must first define the structure and nature of the data fields (variables) you wish to use for your variables and add these to the Database. You must also decide on your Level 1, Level 2, Level 3 and Level 4 hierarchy.

You can also set a security function on your database and maintain audit trails.

8.1 Creating a new database

DataSight Desktop Edition comes with a sample database, but when you want to import data (or if you have received a DataSight database from another user) then you can create a blank database or create a database from the dsd file that you have been sent.

1. Click File, Database, Create.
2. The Create Database dialogue box appears.
3. Choose the location where you want to save your new database.
4. If you are creating a database from a dsd file then check the Create from DSD file checkbox (not available in DataSight Enterprise) and select the location of the dsd file.
5. Click the Create button.
6. You are now able to import or merge data into the new database.

Datasight Administrator is the database management tool for the Datasight Enterprise Edition. Datasight Administrator can be used to create new databases for Datasight Enterprise Edition.

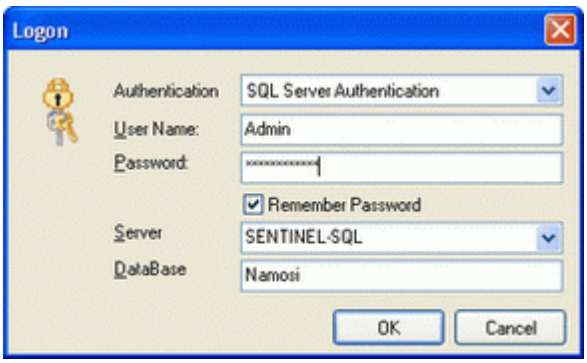
8.2 Opening a database

DataSight Desktop Edition

1. To open an existing DataSight database click File, Database, Open.
2. The Select data location dialogue box appears.
3. Navigate to the required folder, Click Ok.

DataSight Enterprise Edition

1. To open an existing DataSight database click File, Database, Open.
2. Enter the logon information in the dialogue box appears.



3. To Connect to the Database server and Open the Datasight database click Ok.

The DataSight status bar shows the location of the database which is currently open.

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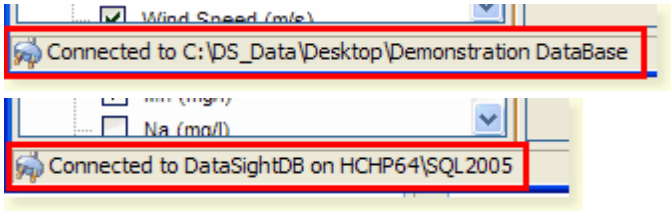
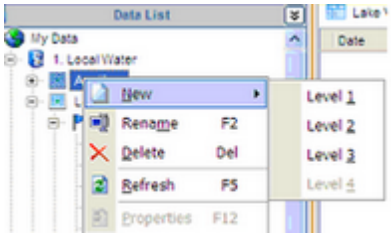


8.3 Adding or deleting Levels 1,2,3 and 4

Add Level 1

1. With the cursor anyw here in the Data List Panel right-click and select New.



2. Select Level 1 and the Add Level 1 dialogue box appears.
3. Type in a Level 1 name.

Add Level 2

1. With an existing Level 1 selected, right-click and select New, Level 2 and the Add Level 2 dialogue box appears.
2. Type in a Level 2 Name.

Add Level 3

1. With an existing Level 2 selected, right-click and select New, Level 3 and the Add Level 3 dialogue box appears.
2. Type in Level 3 name or code.

Add Level 4

1. With an existing Level 3 selected, right-click and select New, Level 4 and the Add Level 4 dialogue box appears.
2. Set the new date.

Delete Level 1, Level 2, Level 3 or Level 4

With the appropriate item selected, right-click and select Delete. A confirm dialogue w ill display, advising that any child data attached to that item w ill also be deleted. Click Yes.

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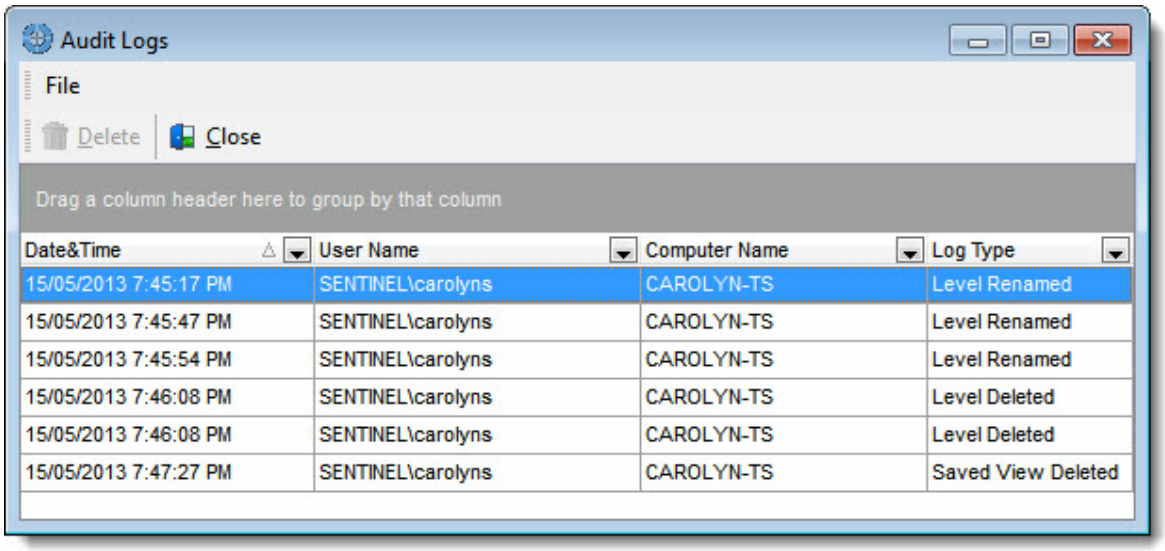
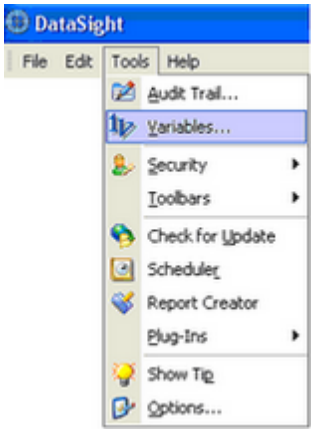
8.3.1 Audit Log

DataSight has an Audit Log of database configuration changes that occur when renaming and deleting Levels, Saved Views and Import Templates. This enables you to track changes you have made to these components.


Audit Logs
File
Delete
Close
Drag a column header here to group by that column
Date&Time
User Name
Computer Name
Log Type
15/05/2013 7:45:17 PM SENTINEL\carolyns CAROLYN-TS Level Renamed
15/05/2013 7:45:47 PM SENTINEL\carolyns CAROLYN-TS Level Renamed
15/05/2013 7:45:54 PM SENTINEL\carolyns CAROLYN-TS Level Renamed
15/05/2013 7:46:08 PM SENTINEL\carolyns CAROLYN-TS Level Deleted
15/05/2013 7:46:08 PM SENTINEL\carolyns CAROLYN-TS Level Deleted
15/05/2013 7:47:27 PM SENTINEL\carolyns CAROLYN-TS Saved View Deleted

8.4 Adding and Updating variables

1. Click the Settings button on the menu bar and select Variables.



The Variables dialogue box appears showing existing DataSight database variables. Two default variables must always be present. These are Date and Time and they will always be greyed out so that they cannot be deleted although you can change their Variable name, Description and Format.

2. To add a variable, click the New button and a new line will be added highlighted in yellow.

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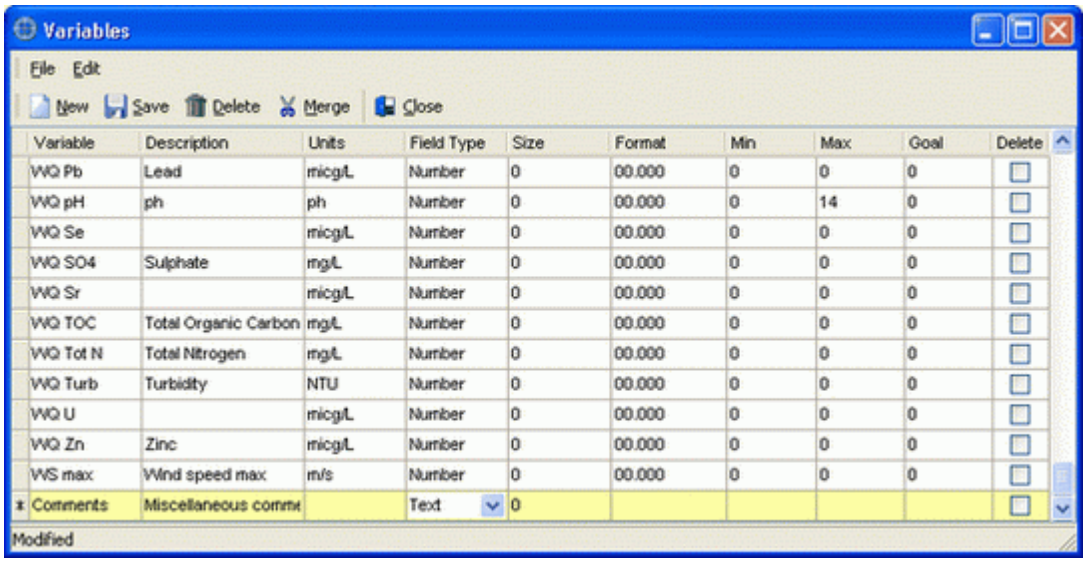
Variables
File Edit
New Save Delete Merge Close
Variable Description Units Field Type Size Format Min Max Goal Delete
WQ Pb Lead micg/L Number 0 00.000 0 0 0
WQ pH ph ph Number 0 00.000 0 14 0
WQ Se micg/L Number 0 00.000 0 0 0
WQ SO4 Sulphate mg/L Number 0 00.000 0 0 0
WQ Sr micg/L Number 0 00.000 0 0 0
WQ TOC Total Organic Carbon mg/L Number 0 00.000 0 0 0
WQ Tot N Total Nitrogen mg/L Number 0 00.000 0 0 0
WQ Turb Turbidity NTU Number 0 00.000 0 0 0
WQ U micg/L Number 0 00.000 0 0 0
WQ Zn Zinc micg/L Number 0 00.000 0 0 0
WS max Wind speed max m/s Number 0 00.000 0 0 0
Comments Miscellaneous comm Text 0
Modified

3. Click on the new line in the Variable column and name the variable.
4. Click in the Description column and type in a meaningful description.
5. Click in the Units column and type in the appropriate unit of measurement.
6. Click in the Field Type column and use the drop-down menu to select the type of value.
   - If you have selected Number then skip the Size column and type or select the Format. The number being formatted is always rounded to as many decimal places as there are digit placeholders ("0" or "#") to the right of the decimal point. If the number contains no decimal point, the value being formatted is rounded to the nearest whole number. Listed number formats are:

     # #

     #,## 0.0

     0.00

     0.0%

     You can choose from this list or type your own.
   - If you have selected Text then type in the maximum number of characters that will make up the string of text in the Size column.
   - If you have selected Date as the Field Type, then you can leave the Format box empty and the default date will be as per your Windows date setting. Otherwise you can type a different format which will override the default.

Data that contains or may contain a prefix such as "<" to denote that measured value is below detection limits should be mapped to an appropriate variable with the field type set as Text. **Note: In DataSight Enterprise, once the field type of a variable is saved as Text it is not possible to changing the variable field type from text to numeric.**

8.5 Deleting variables

1. Click the Tools button on the DataSight toolbar and select Variables.
2. The Define Variables dialogue box appears showing existing DataSight database variables.
3. Click to check the Delete checkbox(es) against any variable(s) that you wish to delete.
4. Click the Delete button.
5. Click the Save button at any point to save changes and continue, otherwise when you click the Close button you will be prompted to save your changes.

If the variable that you intend to delete has been used as a series (dependent) variable or axis (independent) variable in any created graph, you will get a message asking to confirm the delete.

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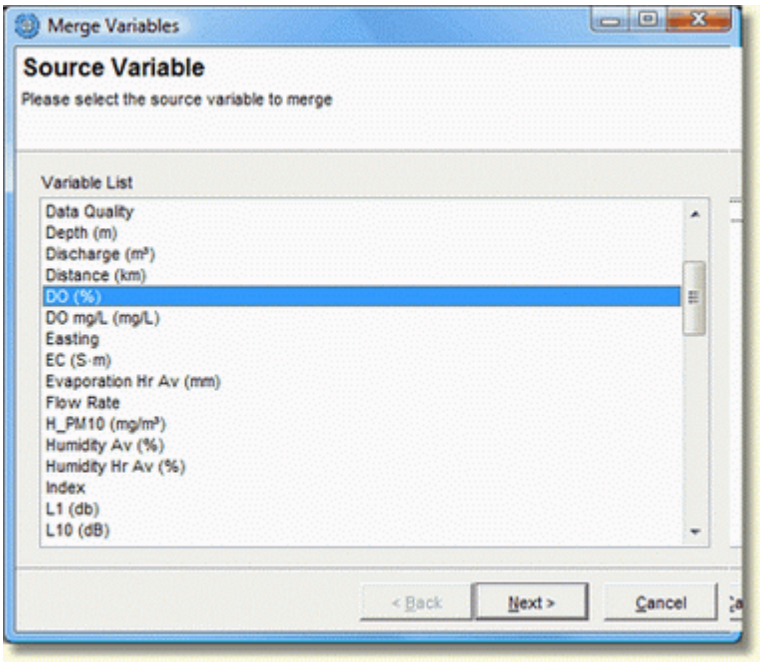
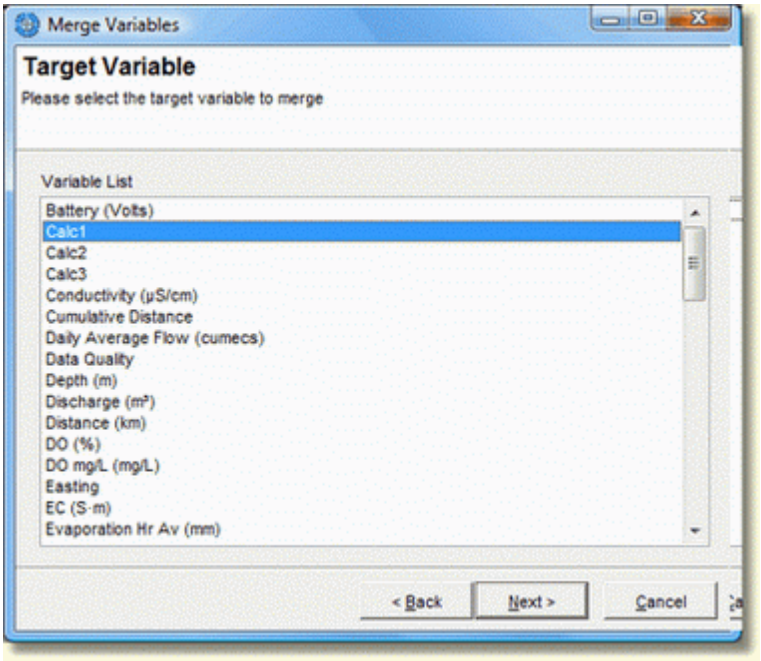
8.6 Merging variables

1. Click the Tools button on the DataSight toolbar and select Variables.
2. The Define Variables dialogue box appears showing existing DataSight database variables.
3. Click the **Merge** button.

4. Select your Source **Variable** you wish to merge from and click **Next**.



5. In the following screen select your Target **Variable** and click **Next**.



6. Select the Merge Options you wish to apply and click **Start Merge**.

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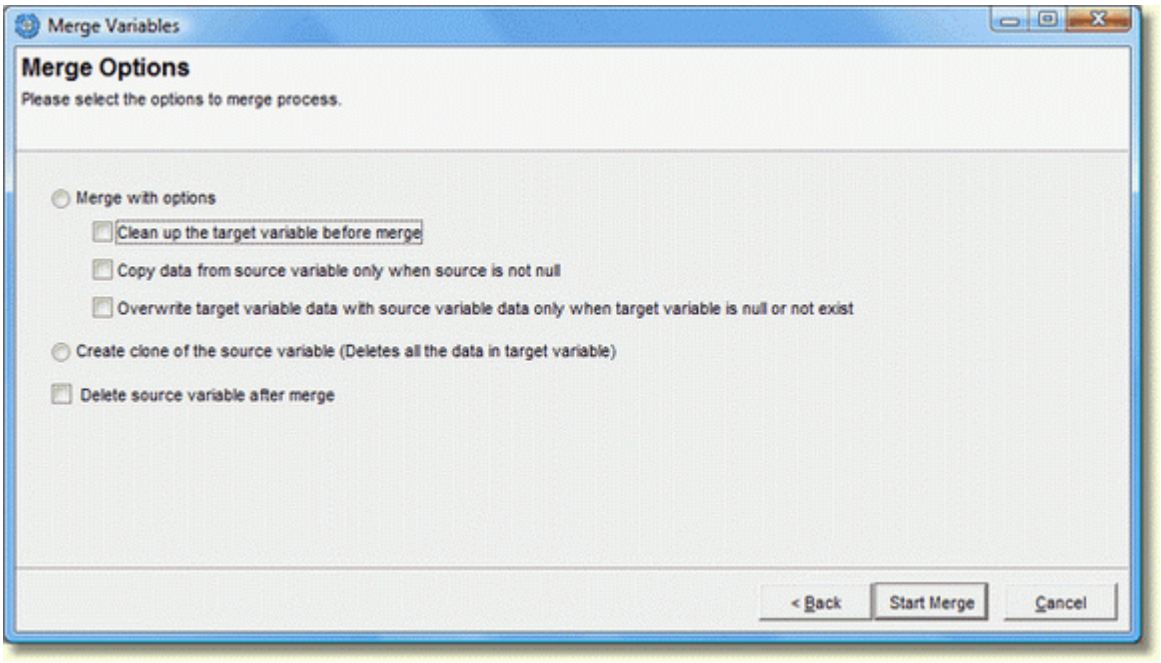
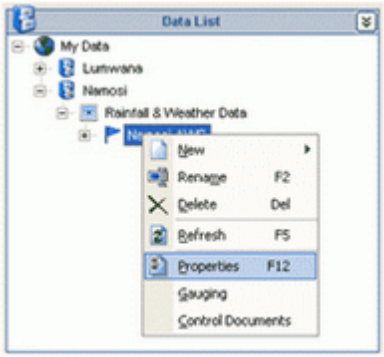

Merge Variables
Merge Options
Please select the options to merge process.
Merge with options
Clean up the target variable before merge
Copy data from source variable only when source is not null
Overwrite target variable data with source variable data only when target variable is null or not exist
Create clone of the source variable (Deletes all the data in target variable)
Delete source variable after merge
< Back
Start Merge
Cancel

7. A window stating "Merge process completed" will be displayed. Click **Done**.

8.7 Audit Trail

It is inevitable that critical records within your databases will get modified or deleted from time to time. If the database system has more than one user, the frequency of these events increases exponentially. With Audit Trail, DataSight has incorporated a solution for monitoring and recording changes to a database, such as when data has been imported or modified or when data has been deleted by a user. Essentially, Audit Trail is a record which tracks and displays who has accessed and edited data, from which computer system, and what operations the user has performed at that time.

This information can be displayed under Level 3 Properties as an Audit Log.



The Audit Logs tab displays information related to changes to Level 3 data, such as imports, conversions (using the Conversion tool) and when data is deleted.

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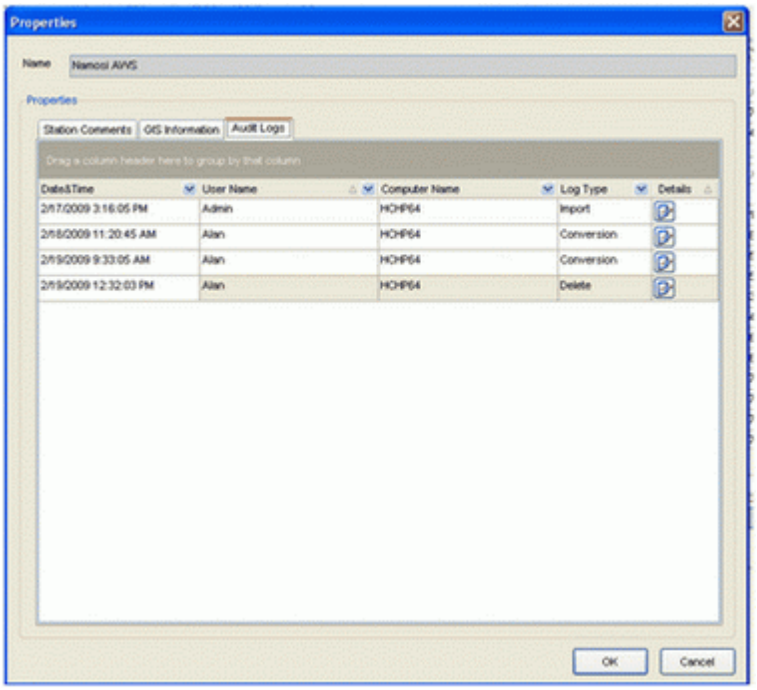
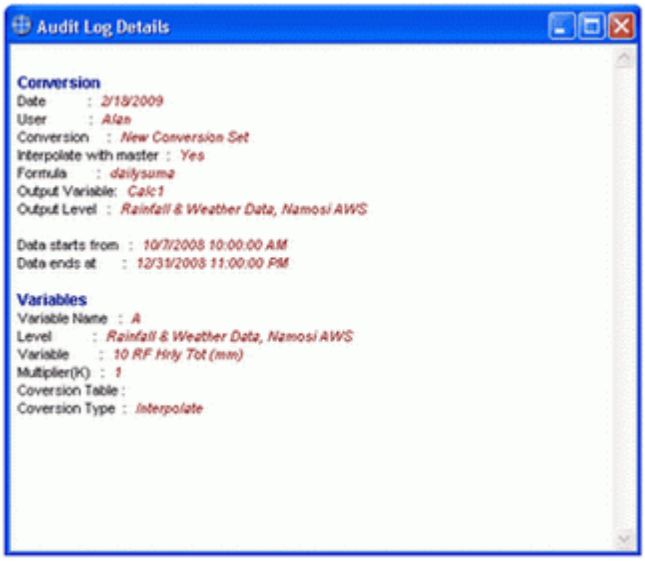


As you can see, the Audit Log records the date and time of the event, the user who was logged in to DataSight at the time, the Computer the user was using, and the type of activity that user completed. The Audit Log also records details for the event, including any related variables, conversions, etc.

If you click the Details icon for a specific event a window detailing the activity is displayed in the 'Audit Log Details' window. This can be useful when attempting to recover lost or accidentally deleted data, as full details of the data are retained, such as those shown below, and these can be copied to the clipboard.


Audit Log Details
Conversion
Date : 2/19/2009
User : Alan
Conversion : New Conversion Set
Interpolate with master : Yes
Formula : dailysuma
Output Variable: Calc1
Output Level : Rainfall & Weather Data, Namosi AWS
Data starts from : 10/7/2008 10:00:00 AM
Data ends at : 12/31/2008 11:00:00 PM
Variables
Variable Name : A
Level : Rainfall & Weather Data, Namosi AWS
Variable : 10 RF Hrly Tot (mm)
Multiplier(K) : 1
Coversion Table :
Coversion Type : Interpolate

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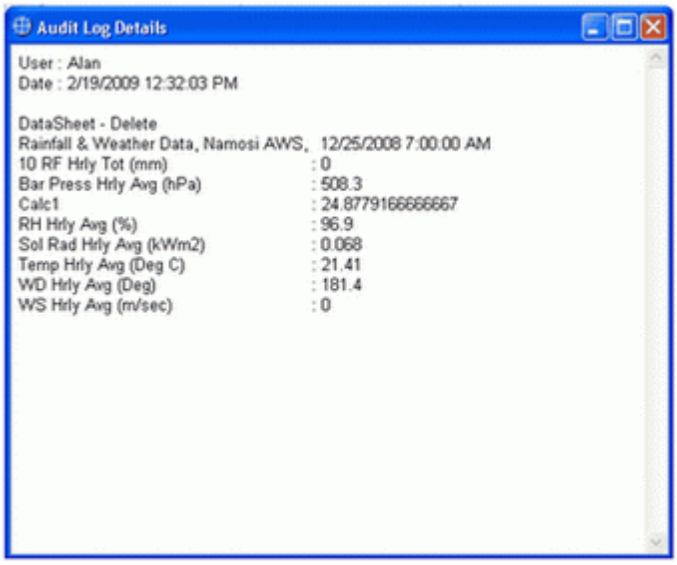
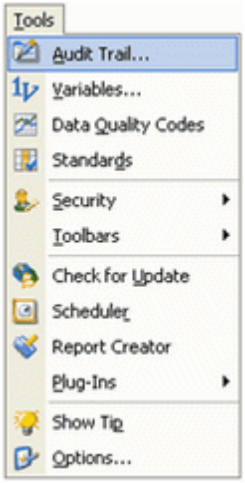

Audit Log Details
User : Alan
Date : 2/19/2009 12:32:03 PM
DataSheet - Delete
Rainfall & Weather Data, Namosi AWS, 12/25/2008 7:00:00 AM
10 RF Hrly Tot (mm) : 0
Bar Press Hrly Avg (hPa) : 508.3
Calc1 : 24.8779166666667
RH Hrly Avg (%) : 96.9
Sol Rad Hrly Avg (kWm2) : 0.068
Temp Hrly Avg (Deg C) : 21.41
WD Hrly Avg (Deg) : 181.4
WS Hrly Avg (m/sec) : 0

See Also: Database Audit Log

8.7.1 Setting Up the Audit Trail table

Before the Audit Trail can begin recording details for imported data and for data entered manually, all the equipment and personnel/user details must first be loaded into Audit Trail Setup. To access Audit Trail Setup in DataSight, select the **Tools** menu and click on **Audit Trail**.



From this window you can click **New** to create **New Equipment** records, detailing the *Brand/Model* and *Serial No.,* and **New Person** records, entering the *Name*, *Organisation* and *User Name* details. You can also edit and/or delete current equipment or people within the Audit Trail. The person and equipment information is now available to attach to data when it is being imported and when data is being entered into a datasheet using Manual Data Entry.

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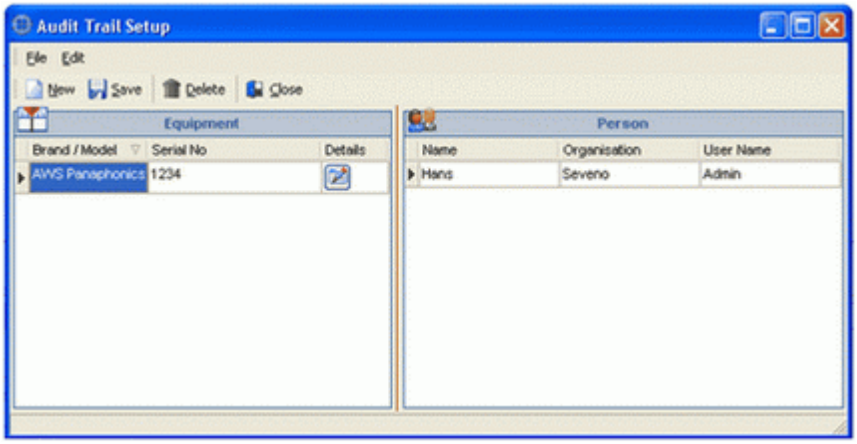
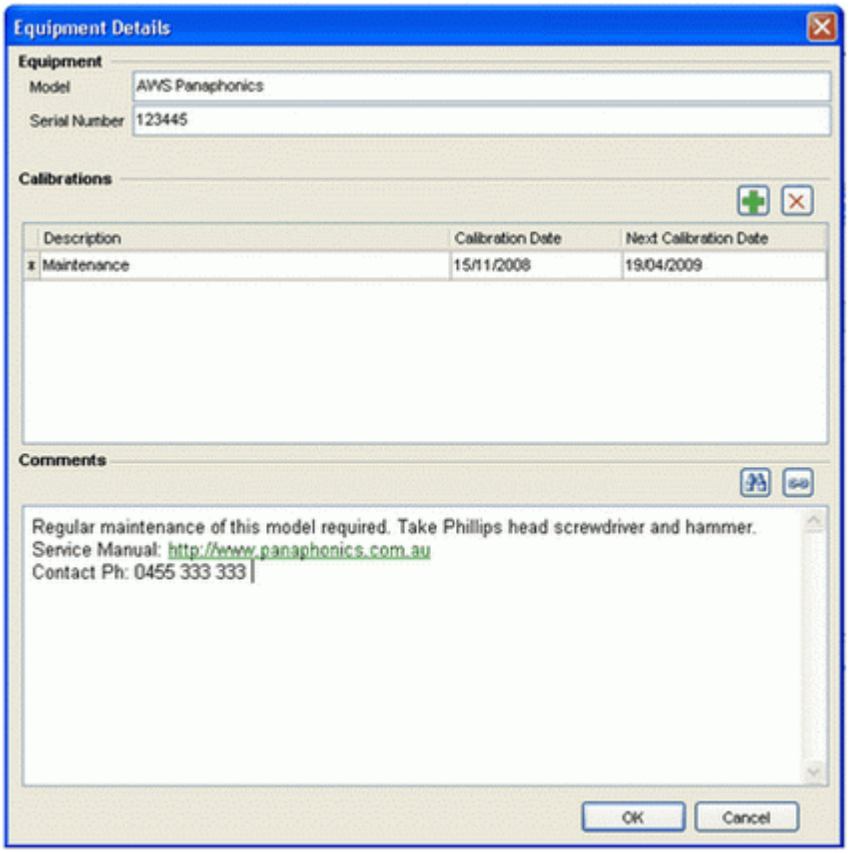


Calibration

The **Details** button next to each of the Equipment can be used to add any calibration details required for the equipment, such as servicing and maintenance, along with any comments.
Click the Details button and an **Equipment Details** window will open allowing you to edit equipment model and serial number, add and delete calibration dates, and enter any comments related to the equipment. For example, add a link to the equipment manufacturer's internet address (once linked, press Ctrl + Left mouse click to follow the link).



When data is imported you can attach an audit trail which records the Equipment used to acquire the data and the Person responsible for collecting it. The Audit Trail details are recorded and may be viewed as (Level 4) Properties against the sample event.

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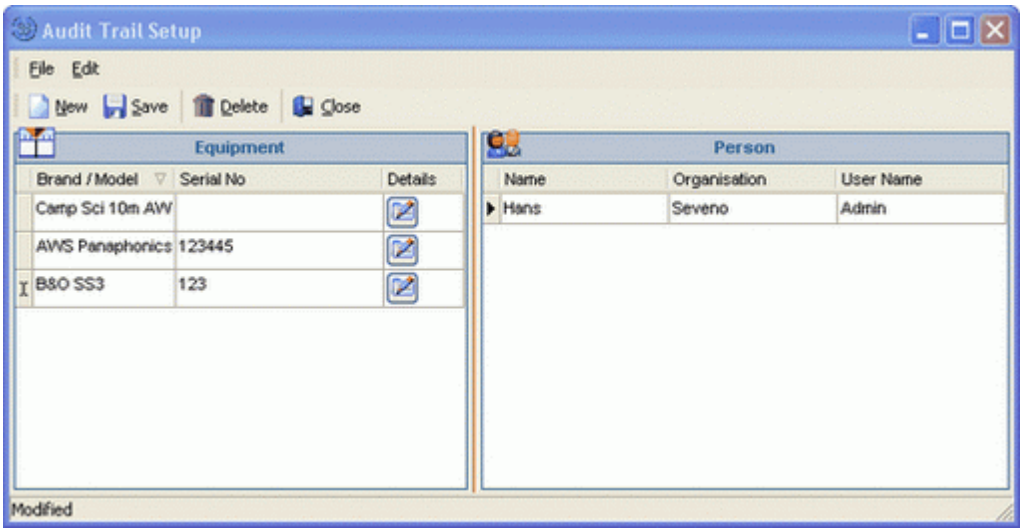
Before any Audit Trail can be recorded, all the equipment and person details must first be loaded into the Audit Trail Table.

Maintain Audit Trail Table

1. On the main menu, click Tools, Audit Trail.
2. The Audit Trail Setup dialogue box appears.



3. Any existing Equipment and Person will be listed.

To add new Equipment or Person

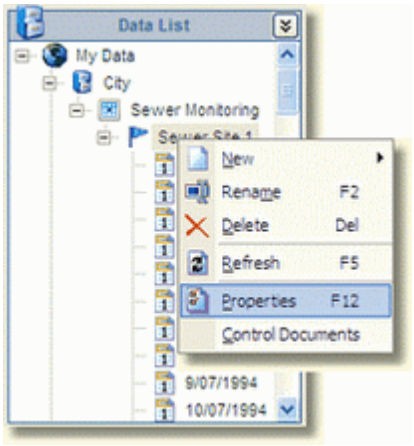
1. Click File, New and make a selection.
2. According to the selection, a new line will be added.
3. Type in the details.
4. Note that for New Person you may also select a User Name if that person has also been added as a User.
5. Click Save then continue to add details or click Close to save and close the dialogue box.

To delete Equipment or Person

1. Click anywhere in the row for that equipment or person.
2. Click Delete.
3. Note that deleting any Person or Equipment will remove them from any existing Audit Trail.

8.7.1.1 Level 3 Properties

1. With an existing Level 3 selected, right-click and select Properties.



2. The Properties dialogue box appears showing the Level 3 Name.
3. Under Station Comments. Type any information or copy and past images relevant to the station.

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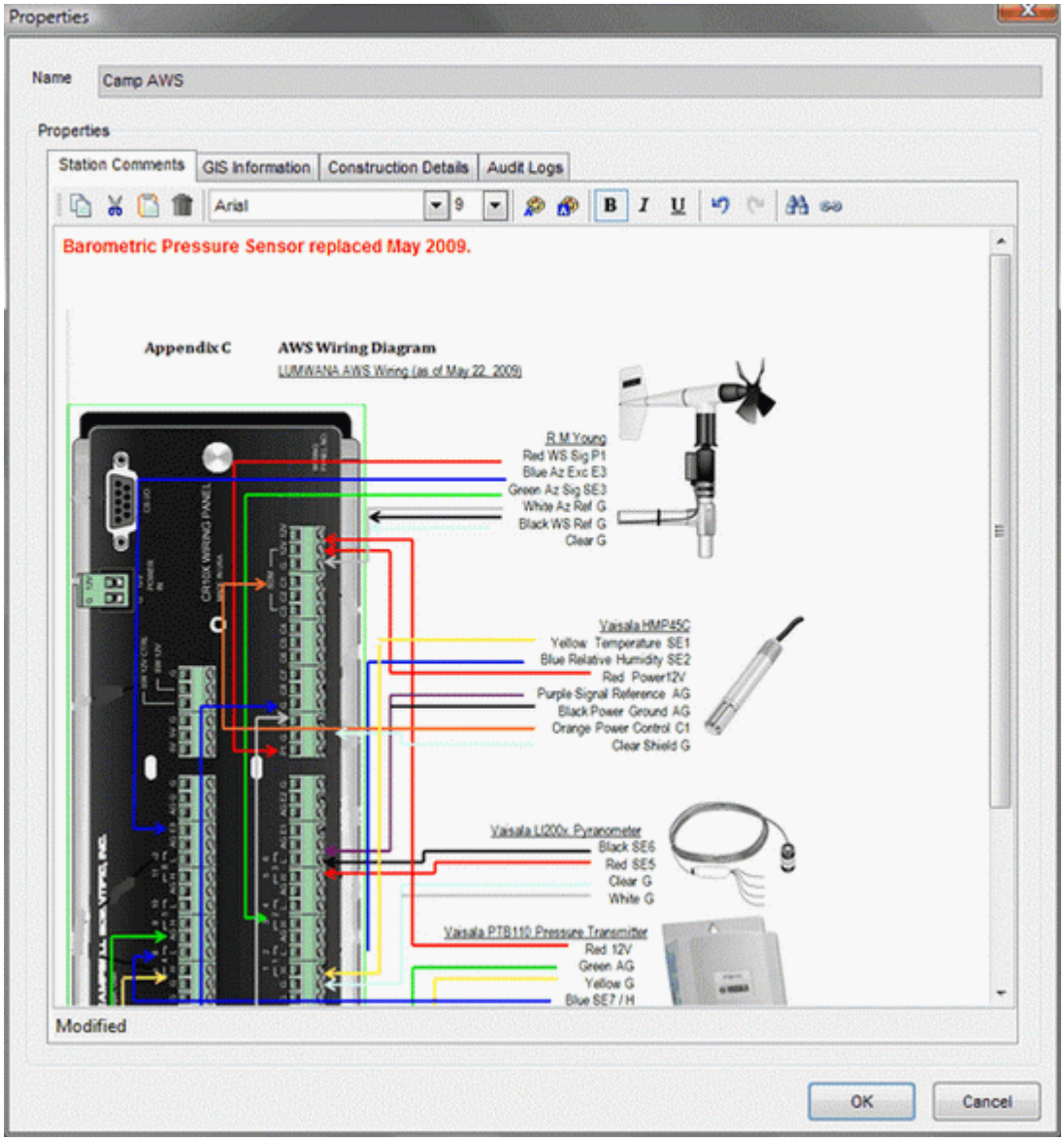
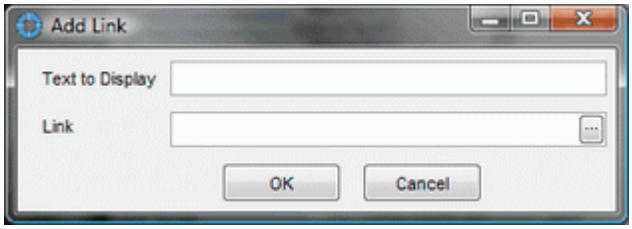


4. Click on the icon. The Add Link dialogue box appears. (Once linked, press Ctrl + Left mouse click to follow the text link to a webpage, file, etc.)



5. Click on the icon. The Find dialogue box appears. Type in the text you wish to find in the Station Comments window.

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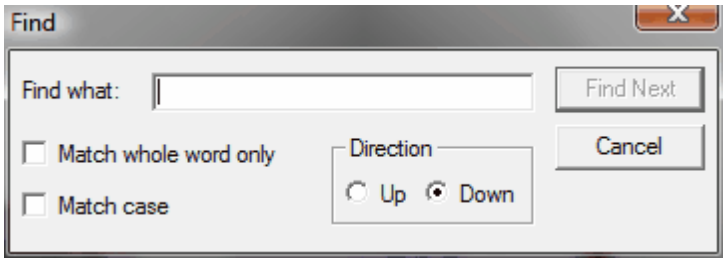
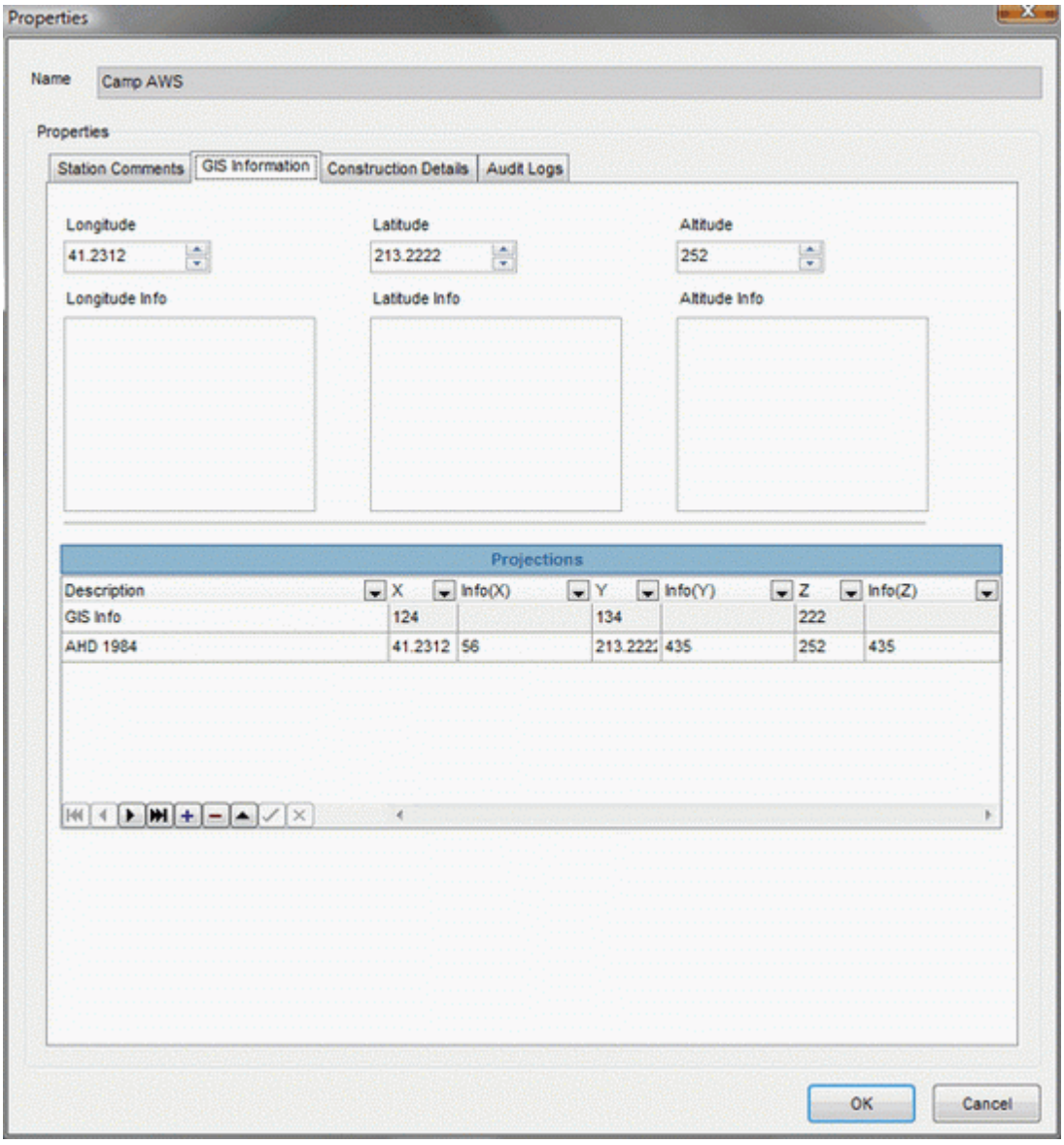


6. Input your GIS information for the site. Longitude, Latitude and Altitude information boxes are also present for additional information relating to the site locality.



This GIS information can be linked to MapInfo (and other GIS software) for use in mapping and spatial analysis.

7. The Construction Details area allows construction details of individual stations to be recorded.

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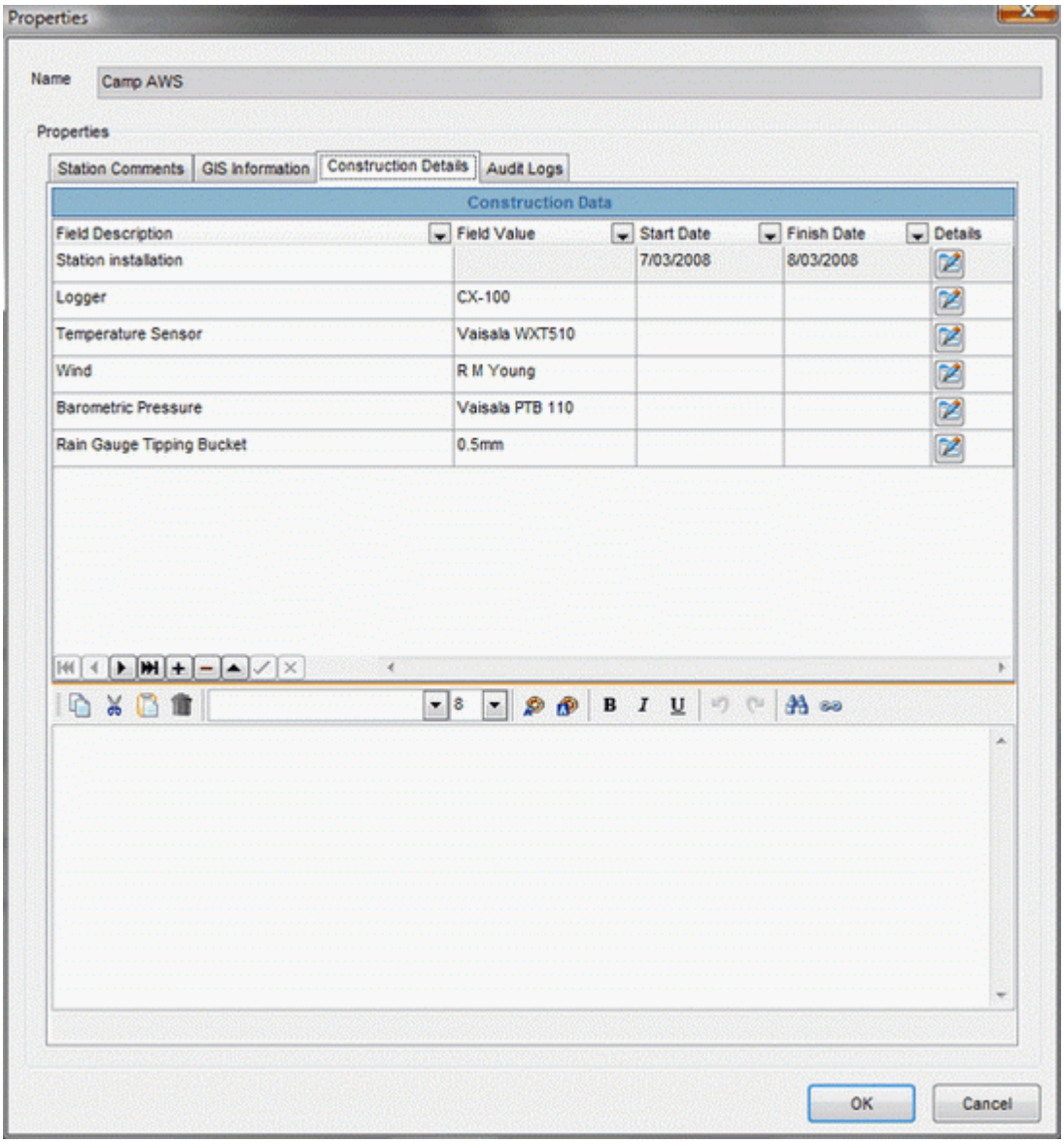

8. The **Audit Logs** tab displays information related to changes to Level 3 data, such as imports, conversions (using the Conversion tool) and when data is deleted, as well as other configuration changes for import templates and scheduled tasks. They keep date and time, username and computer name information about the activity as well as the all the details of the activity. For data import records, inclusion of the specific worksheet within an Excel file that was the source data sheet.

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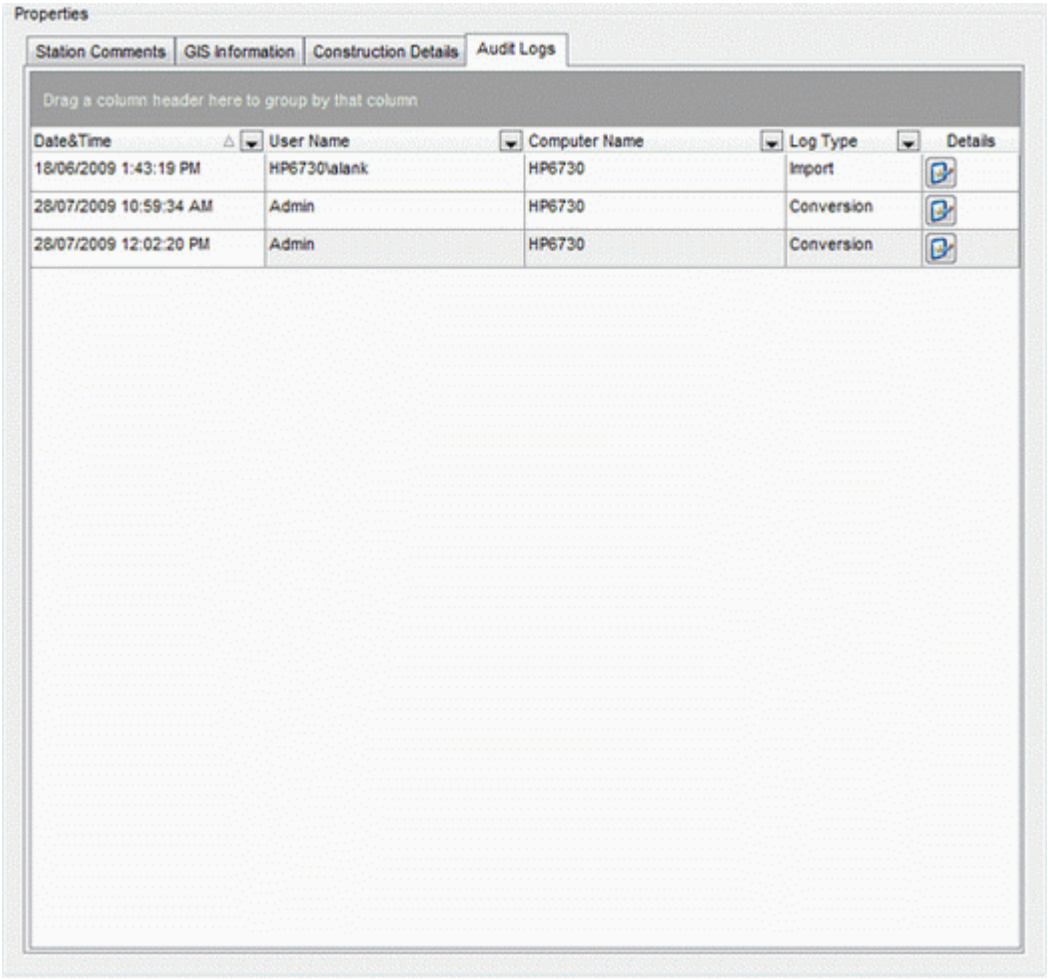

As you can see, the Audit Log records the date and time of the event, the user who was logged in to DataSight at the time, the Computer the user was using, and the type of activity that user completed.
When you click the Details button you can get details of the activity.

Audit Log Details
Import:
Import Date&Time:Source File:18/06/2009 1:43:12 PM
Source File:C:\Users\alank\Documents\Seveno\Lumwana Training\aws.xls
Number of lines in source file : 5721
Import starts from : 2
Import finishes at : 5720
Levels:
Level 1 : Project L
Level 2 : Weather Stations
Level 3 : Camp AWS
Variables:
Date (Field3) --> Date
Time (Field4) --> Time
Dry Temp. Hr Av (°C) (Field5) --> Dry Temp Hr Avg (°C)
Evap. Hr Total (mm) (Field6) --> Evap Hr Total (mm)
Humidity Hr Av (%) (Field7) --> Humidity (%)
Press Hr Av (mbar) (Field8) --> Pressure Hr Av (mbar)
Rainfall Hr Total (mm) (Field9) --> Rainfall Hr Total (mm)
Solar Rad. Hr Av (kW/SqM) (Field10) --> Solar Rad Hr Av (kW/SqM)
Vap. Press. Hr Av (kPa) (Field11) --> Vap Press Hr Av (kPa)
Wind Dir. Hr Av (°) (Field12) --> Wind Dir Hr Av (°)
Wind Vel. Hr Av (m/s) (Field13) --> Wind Vel Hr Av (m/s)
Standards Check: -

Information in the Audit Log Details screen is in RTF format.

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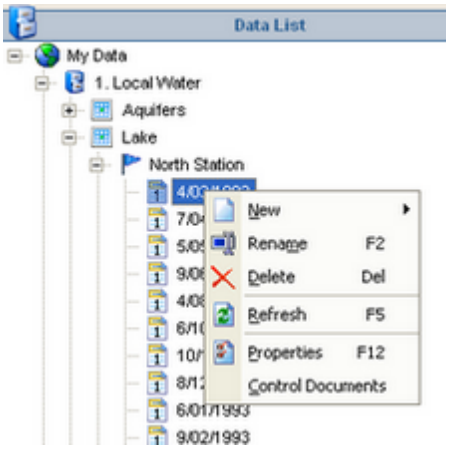
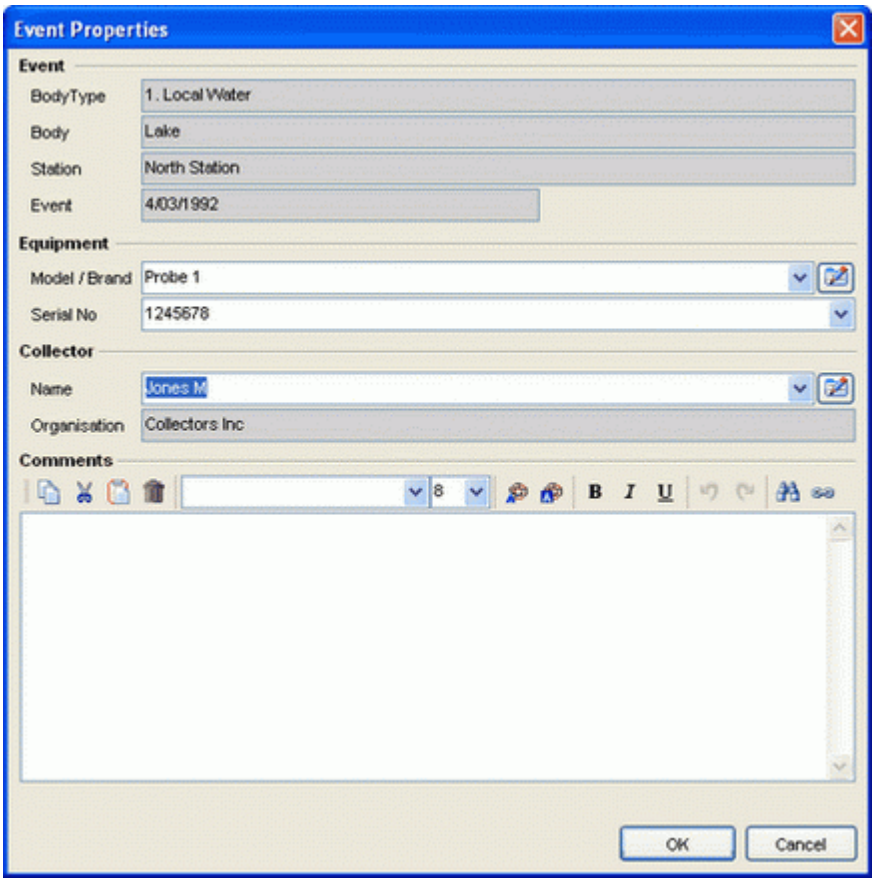
This can be useful when attempting to recover lost or accidentally deleted data, as full details of the data are retained. You can copy this information into to Clipboard and use somewhere else.

8.7.1.2 Level 4 Properties

1. With an existing Level 4 selected, right-click and select Properties.



2. The Event Properties dialogue box appears showing the Body Type, Body, Station and Events.



3. Check your Equipment and Collector information for the Level 4 Date. If the appropriate choice is not listed in the drop down menus, click on to open and edit audit trail information.
4. The Comments box can be used to store other information relating to the Level 4.
5. Click on the icon. The Find dialogue box appears.

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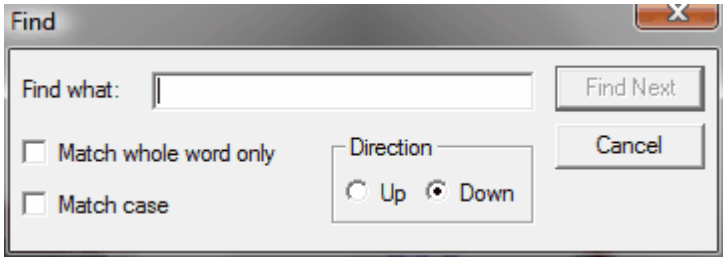
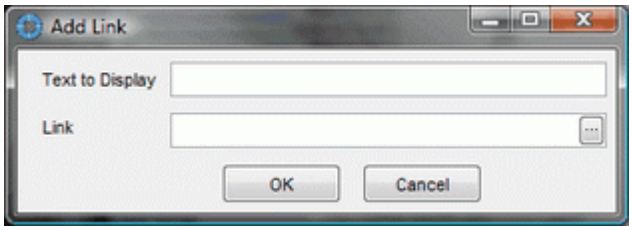


6. Type in the text you wish to find in the Comments window.

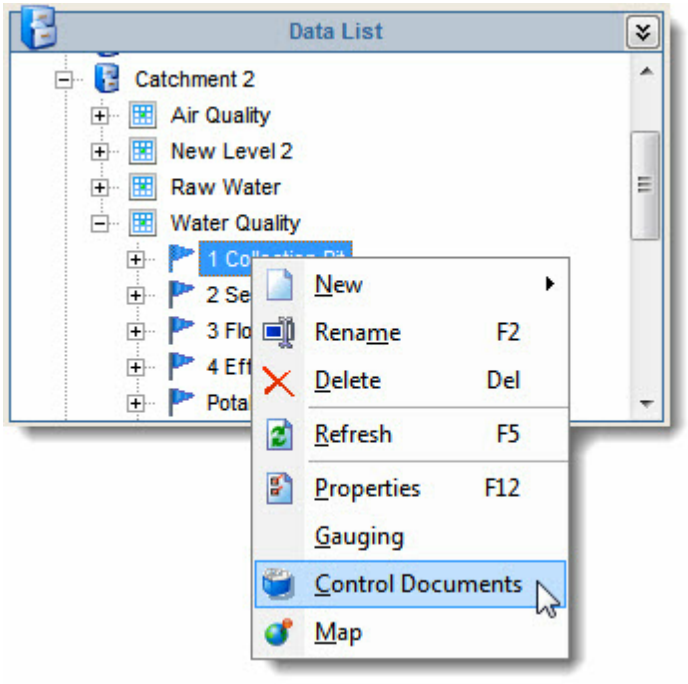
7. Click on the icon. The Add Link dialogue box appears.



8.7.1.3 Level Control Documents

The Control Documents panel provides a comments text box that can be used to store information relevant to all (or the majority of) data in the database.

1. Right-click on each level in Data List. A pull-down menu will appear.



2. Click on Control Documents. The Control Documents window appears.

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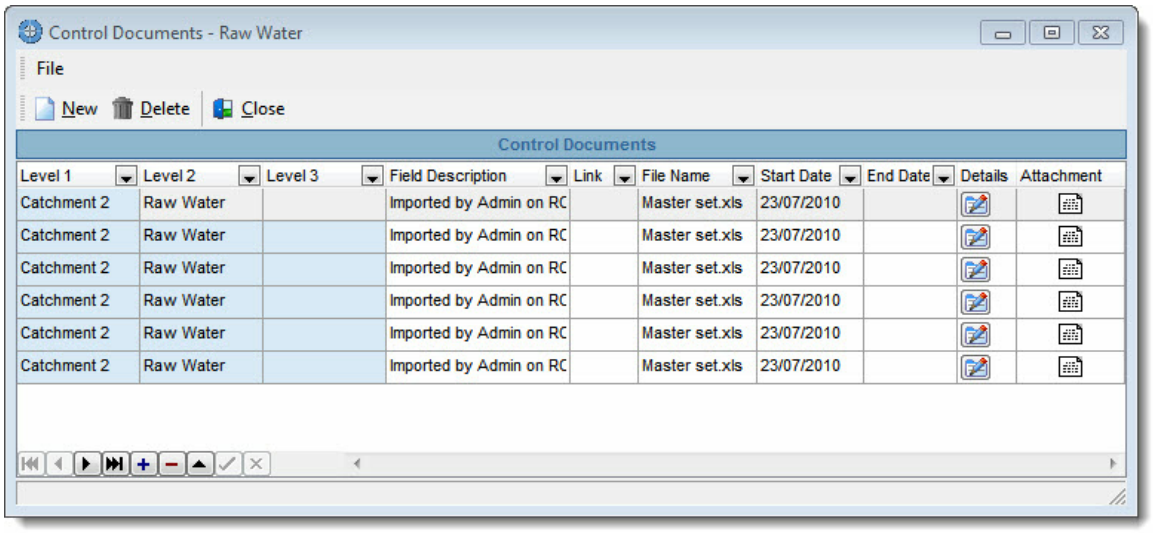
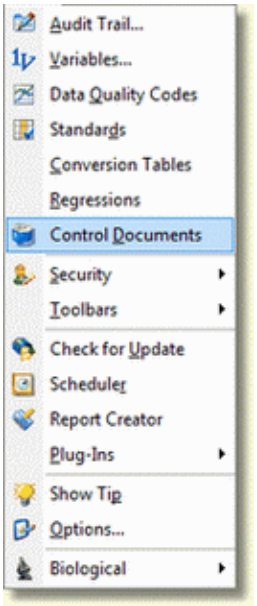


3. Type in your rich text comments in the editor, or create links to other documents on your computer or network.

8.8 Control Documents

Control Documents provides an area within DataSight for document management within your database.

It is accessible via the **Tools** menu (or by right-clicking on a specific **Level 3)**.



Access via the Tools menu

If Control Documents are accessed via the Tools menu it will display the general control documents for the database you are currently using.

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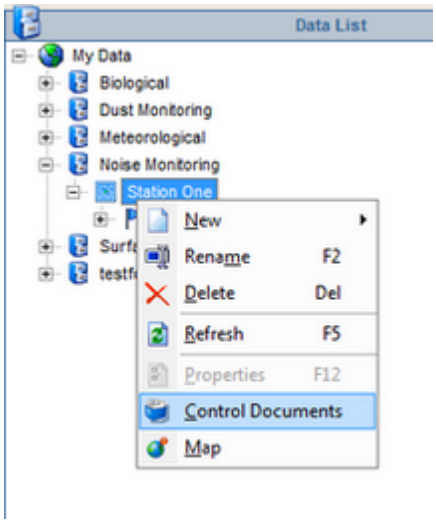
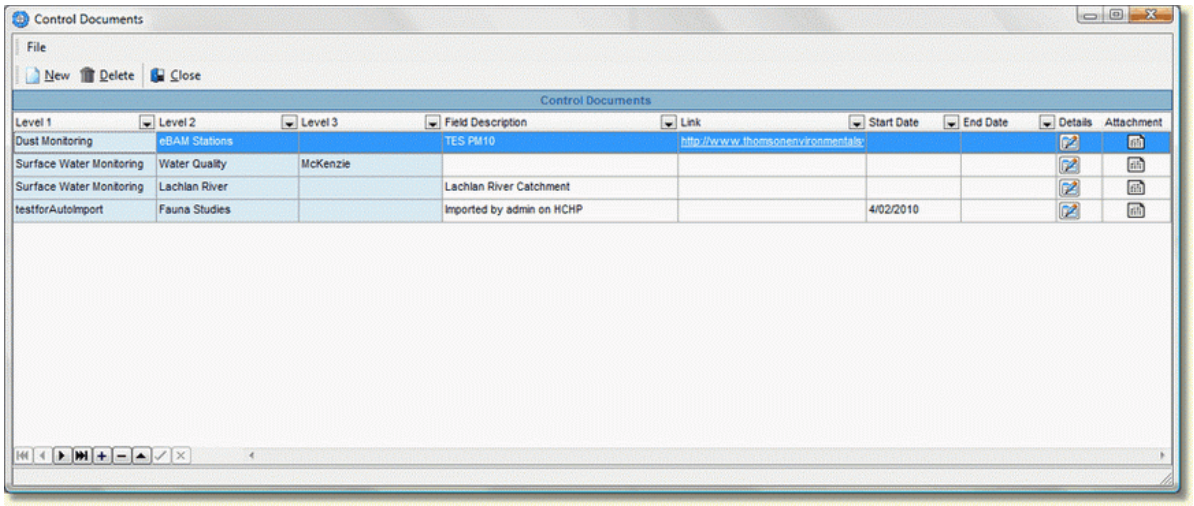
Access via Level 3

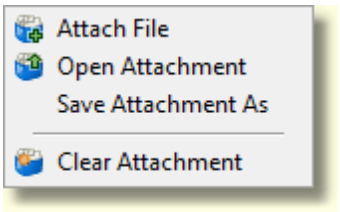
Control Documents is Level 3 aware, so that if it is opened via a right-click on Level 3 it only shows documents for that specific Level 3.



The Control Documents screen is shown below.


Control Documents
File
New Delete Close
Control Documents
Level 1 Level 2 Level 3 Field Description Link Start Date End Date Details Attachment
Dust Monitoring eBAM Stations TES PM10 http://www.thomsonenvironmentals/
Surface Water Monitoring Water Quality McKenzie
Surface Water Monitoring Lachlan River Lachlan River Catchment
testforAutoImport Fauna Studies Imported by admin on HCHP 4/02/2010

Each record has a Field Description for entering a document title or the details of the document. The Link column can be used to attach and open links by right-clicking on the Link area for a particular record. This is a hyperlink and can be a link to any local or network file, or can be used as an internet link. Each record also has a Start Date and End Date, and these can be entered to specify the period of applicability for a document, for example. The Details column allows further details regarding the documents to be entered (These details are RTF documents, which allow text, images and hyperlinks). The final column provides an area for attaching files: Right-clicking in the Attachment column allows the user to attach any file type, as shown below.



Load Attachment is used to add an attachment to that record

Open Attachment opens the attachment using the associated software in Windows.

Save Attachment As saves the file with a new name, without changing the original format. Users can change the name while saving.

Selecting Clear Attachment deletes the attachment (without deleting the record).

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You can save ICS Outlook Calendar files into Control Documents, which can be scheduled for email. Open your Outlook Calendar, click Save As and select iCalendar format. Once your calendar is saved in this format, open the control document window where you wish to attach the calendar and then click on the Browse icon . Select the calendar for attachment and click open. Using the Scheduler you can then disseminate this calendar file to intended recipients. A possible example where this might be of use is the emailing of sampling runs to staff members.

An important note for users of older versions of DataSight

Old (existing) control documents are kept as a record. That is, DataSight will automatically create an initial record and copy all control documents created for database/s in older DataSight versions into the Details area of the first record.

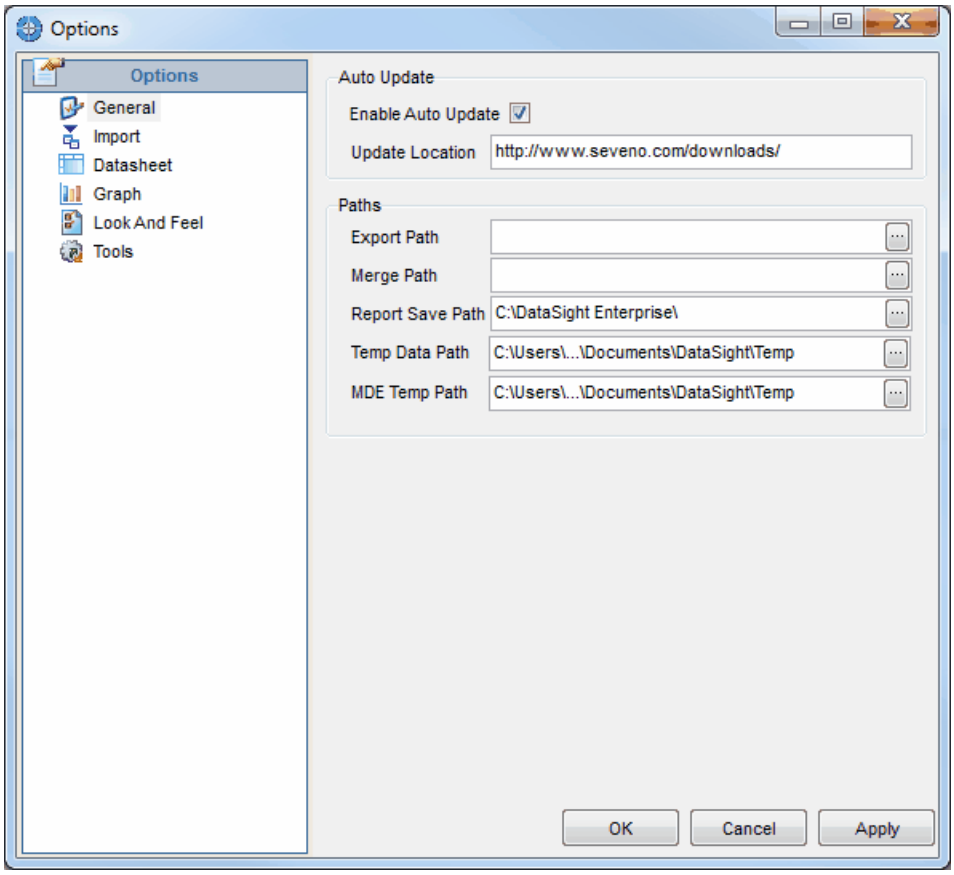
8.9 Options

Set Default preferences

1. Click Settings, Options on the main menu.
2. Select the functional area in which to set preferences, from the list in the left panel.

General

- Toggle the Enable Auto Update on and off and display the location to check for Updates.
- Set default paths for exporting, merging data and/or saving scheduled reports.
- Set a new default temporary data pathway. DataSight automatically recognizes when you are attempting to import a large file (in excess of 10,000 lines) and assigns a temporary data location in order to make the importation process faster and more efficient. The default location is C:\TEMP but you can set a new temp data path at any time or if the C Drive is low on space.



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Important

It is essential that a DataSight user has access rights to the drive and folders nominated above. If users are not able to write to the default paths, as displayed in the above window, please change the paths in the Options window.

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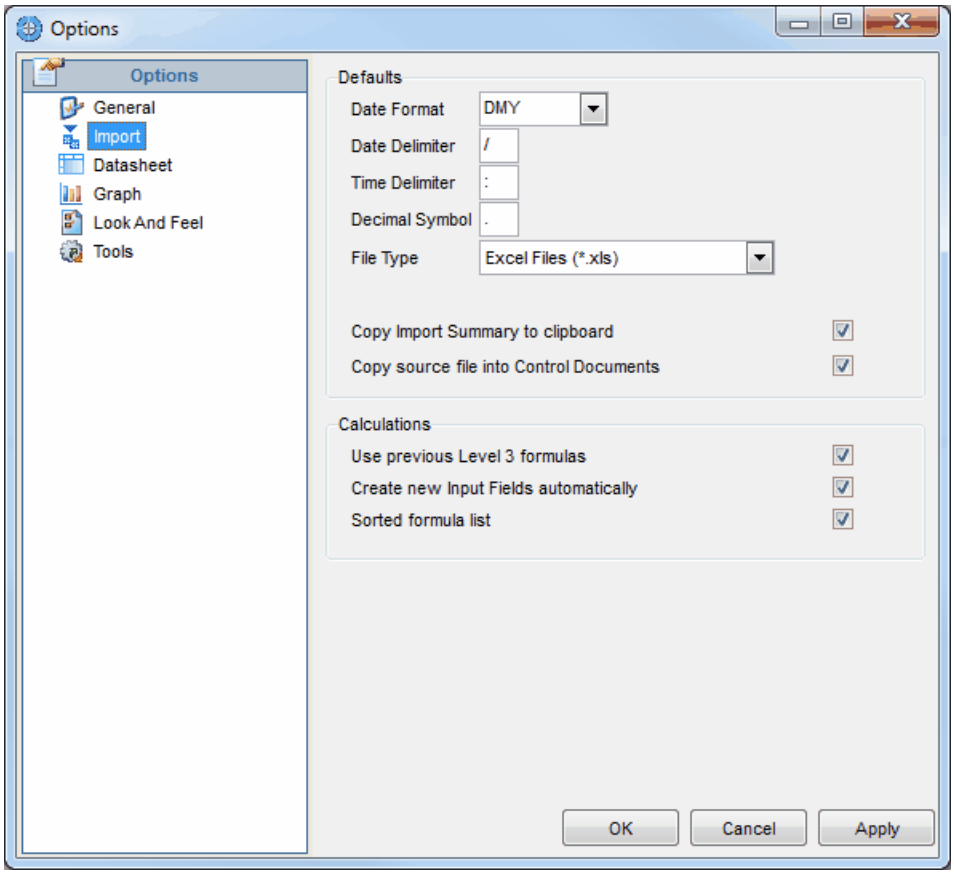
Import

Set default formats for all import files:

- Date format (MDY, DMY, etc)
- Date delimiter
- Time delimiter
- Decimal symbol
- The default file type to search for when importing files (please note this does not limit the type of files for import, simply the type of files DataSight will see first).
- Copy an import summary to the Windows clipboard automatically

Under the Calculations options the user is also able to define the saved defaults for calculations which will be carried out during the Import process.

- Use previous Level 3 formulas - checking this option will allow DataSight to remember the calculations carried out on the Level 3 previously and present these to the user when similar files are imported to this Level 3.
- Create new Input Fields automatically - checking this option will allow DataSight to remember the Input Fields used previously for this Level 3 (station).
- Sorted formulas list - sorts the Input fields alphabetically.



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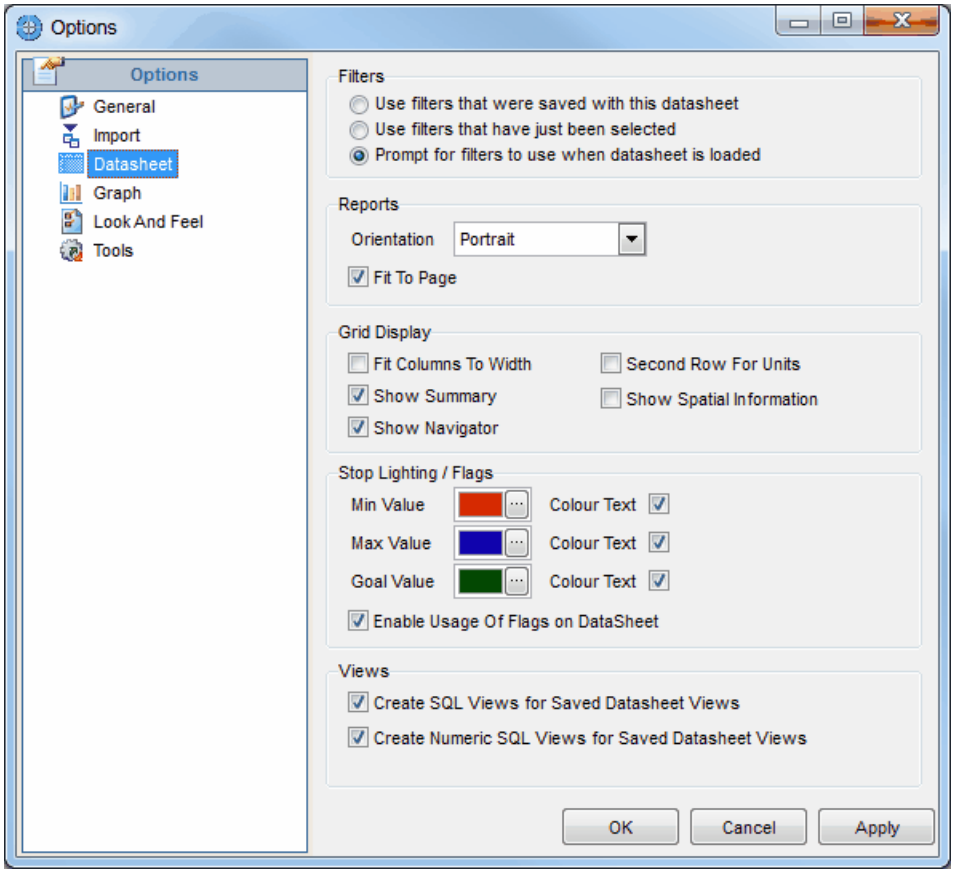
Datasheet



Change Filters Reports, Grid Display, Stop Lighting and SQL Views:

Filters

When selecting a saved Datasheet you can elect:

- to always use the filters that were originally saved with that Datasheet or
- always to use the new filters that have just been selected or
- always to prompt with the above options

Reports

Change the page orientation and toggle the Fit to Page options for any Datasheet when output as a report.

Grid

- Check/uncheck the Fit Columns to Width checkbox to toggle the auto fitting of the Datasheet columns to the available width of the Datasheet panel.
- Check/uncheck the Show Summary checkbox to default the display of a statistical summary on the Datasheet
- Check/uncheck the Show Navigator checkbox to default the display of a statistical summary on the Datasheet

Stop Lighting / Flags

Change the colour of the cell background in a Datasheet to highlight data that is:

- less than the Minimum Value listed for that variable
- greater than the Maximum Value listed for that variable
- equal to the Goal Value listed for that variable

These Stop Lighting colour changes may be applied only to the text in the cells if preferred.

Enabling the use of Flags in the Datasheet allows the user to assign flags to specific data when viewed in the Datasheet window.

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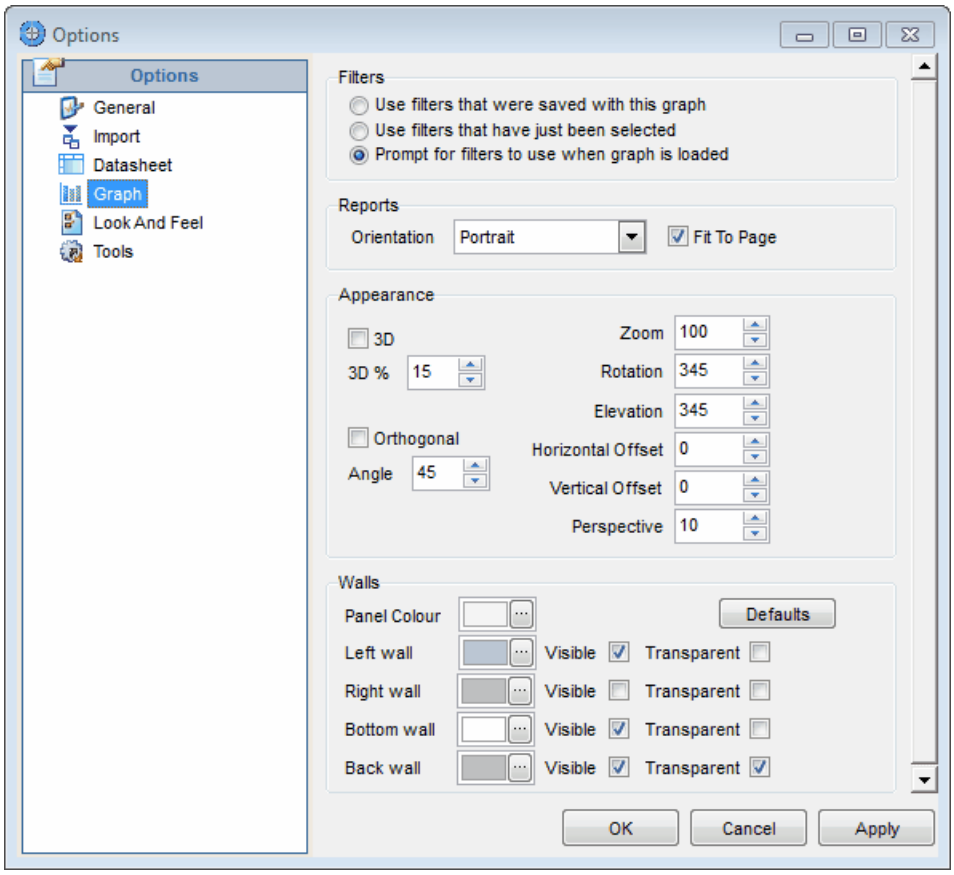
Views

- Create SQL Views for Saved Datasheet Views: DataSight creates SQL database tables for Saved DataSheets - allows integration and referencing from other software, such as MapInfo
- Create Numeric SQL Views for Saved Datasheet Views: DataSight creates SQL database tables with numeric version of text variables - again, for integration with other software/s.

These features are only available in the DataSight Enterprise Edition.

Graph



Change Filters, Reports and Default appearance of graphs:

Filters

When selecting a saved graph you can elect to always:

- use the filters that were originally saved with that graph or
- use the new filters that have just been selected in the filter panel or
- prompt with the above 2 options

Reports

- Change the page orientation and toggle the Fit to Page options for any graph when output as a report

Appearance

- Alter the graph's appearance, including displaying 3D and Orthogonal effects and the related zoom, rotation, elevation and offset aspects of these settings

Walls

- Alter the colour and visibility of the graph's panels and walls

Look and Feel

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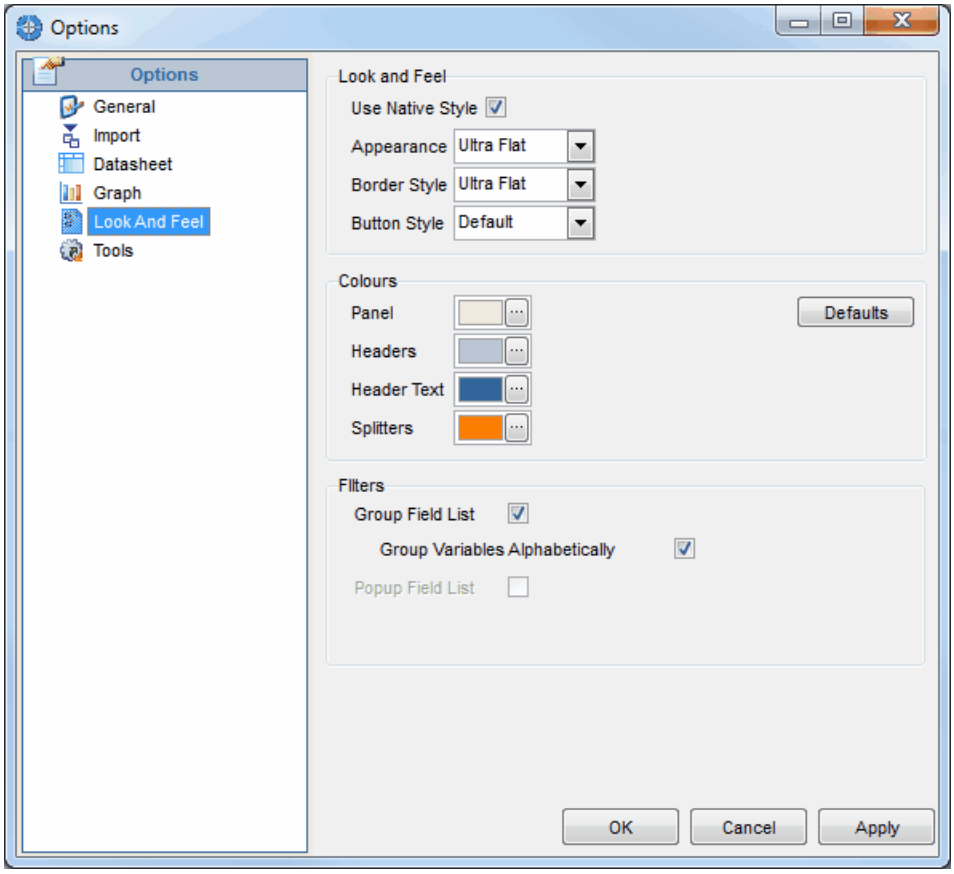

Change the look and feel of DataSight by changing appearance attributes. The default setting is Native Style which applies your native Windows settings.

To change, uncheck the Native Style checkbox and use the drop down menus to choose Appearance, Border and Button styles.

Filters

Group Field List allows fields to be selected from a choice of Level, Date or Variable pop-up menus when applying filter conditions. When not activated, a single menu will be displayed with all levels, dates and variables listed together.

Alongside this, checking the Group Variables Alphabetically box makes displaying a longs list of variables easy to sort through.

The default is a simple Popup Field List.

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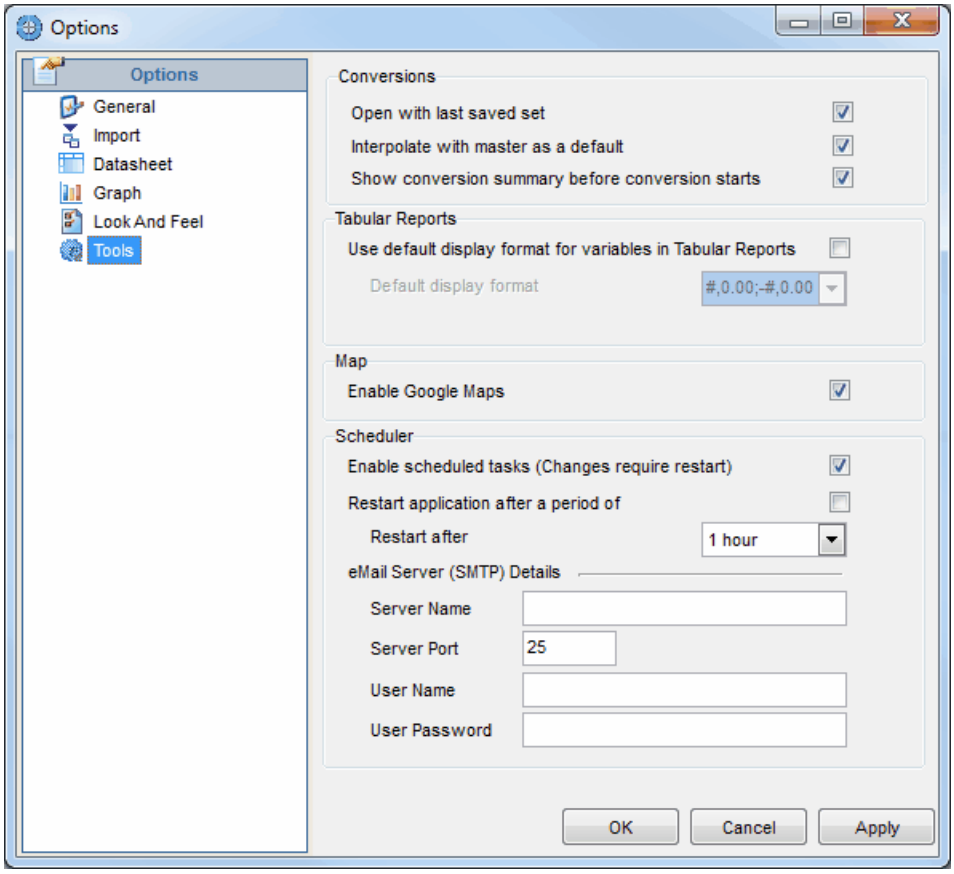
Tools



Tools allows the user to set the default settings for Conversions within Datasight including:

- opening the program with the last saved conversion set;
- interpolate, or estimate the values, with the master dataset; and
- showing the conversion summary for confirmation before starting conversions.

Tabular Reports

The user can elect to use a selected default format for displaying variables in tabular reports. If this option is left unchecked the display format will be taken from the format selected in the Variable list.

Map

The user can elect to enable/disable Google Maps. This option should be unchecked where a computer does not have an internet connection available.

Scheduler

- These options are related to the DataSight Scheduler:
- Enable/disable the scheduler
- **Restart application after a period of...**

Restart DataSight after a user-defined period: this clears the DataSight cache of past scheduled tasks, allowing all DataSight operations to run smoothly. This is useful where there are several scheduled tasks running and/or regular scheduled tasks.

- **Email Server Details**

Enter the default email settings for sending scheduled output files from DataSight. Email recipients are selected under individual tasks.

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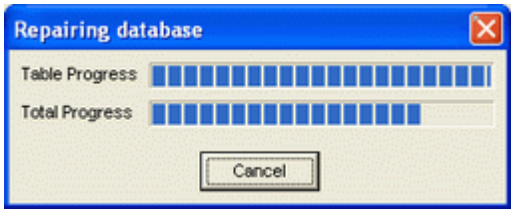
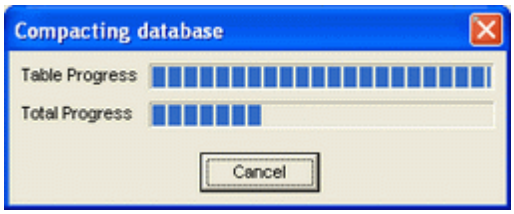
8.10 Repairing and compacting the Database

DataSight Desktop has a database repair function that scans everything inside your data file and repairs any errors. Also, over time, your DataSight database will increase in size. If you ever remove data, the database file will have unused areas that once contained the deleted data. These unused areas can affect the efficiency with which DataSight works with the database, and they consume space on your hard disk that can be used for other purposes. We recommend that you use the Compact function to remove the unused areas in the database and keep DataSight performing efficiently.

1. Click File, Database, Repair.



2. Click File, Database, Compact.



Datasight Administrator is the database management tool for the Datasight Enterprise Edition to carry out Reindexing, Defragmentation, Shrinking etc.

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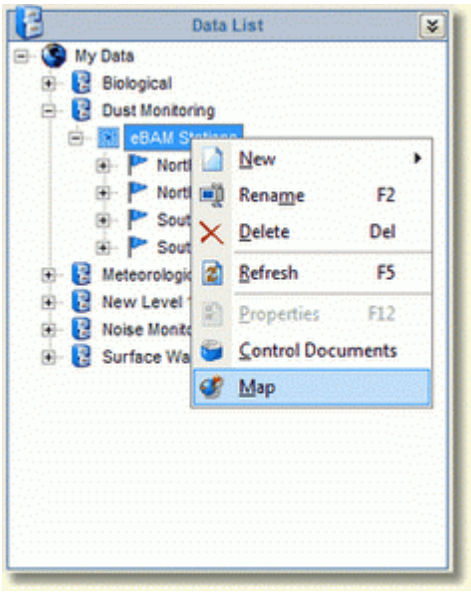
9 Maps

Map Information can be stored in DataSight allowing users to view the location of stations.

Maps are accessible by right-clicking on a **Level 2** or **Level 3** within the Data List and selecting **Map**.



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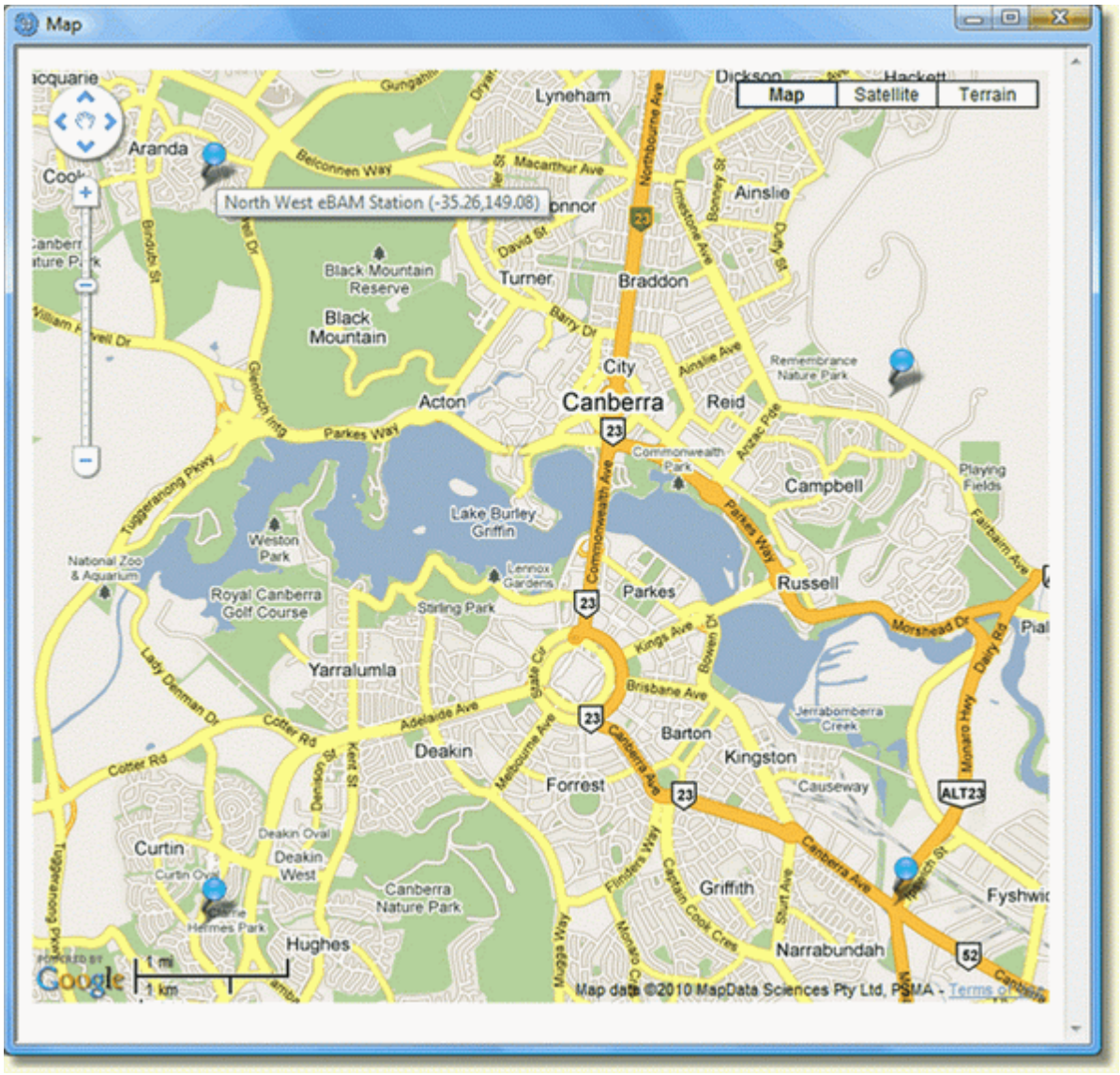
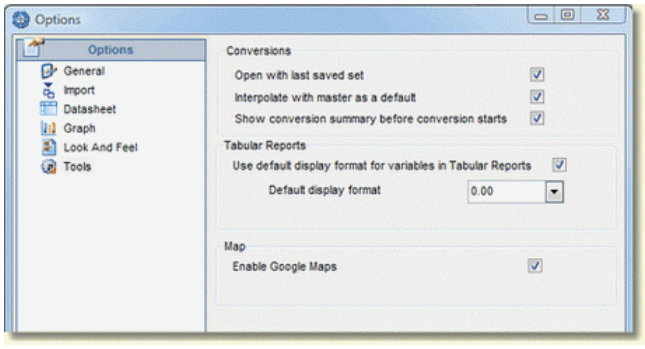


Maps are also accessible via the **Level 3** Properties area as specified on the following pages.

(You will require an internet connection to access the maps).

If you do not have an internet connection and wish to turn Google Maps off, go to the **Tools** menu in DataSight and Select **Options...**

When the Options window opens, select Tools on the left of the window.



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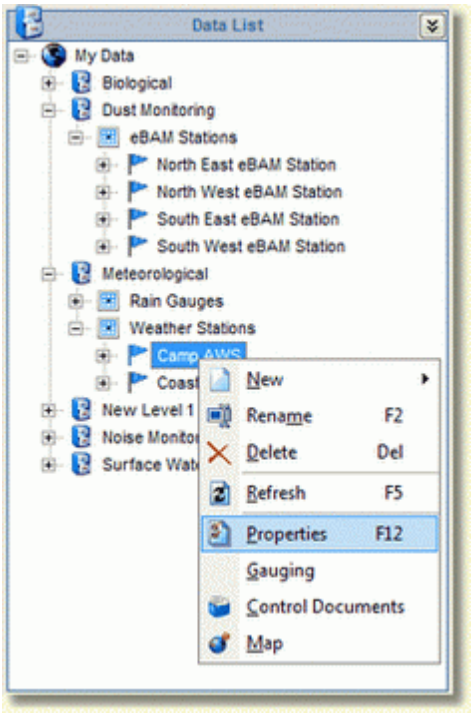
You can now check the Enable Google Maps checkbox and click Apply.

9.1 Entering Map Details

To display information in the Map window of DataSight station details must be entered in the GIS Information area of a specific Level 3.

Right-click on the Level 3 and select Properties.



In the Level 3 Properties area select the **GIS Information** tab.

Within this area you may enter the Longitude and Latitude of a Level 3 along with any associated information.

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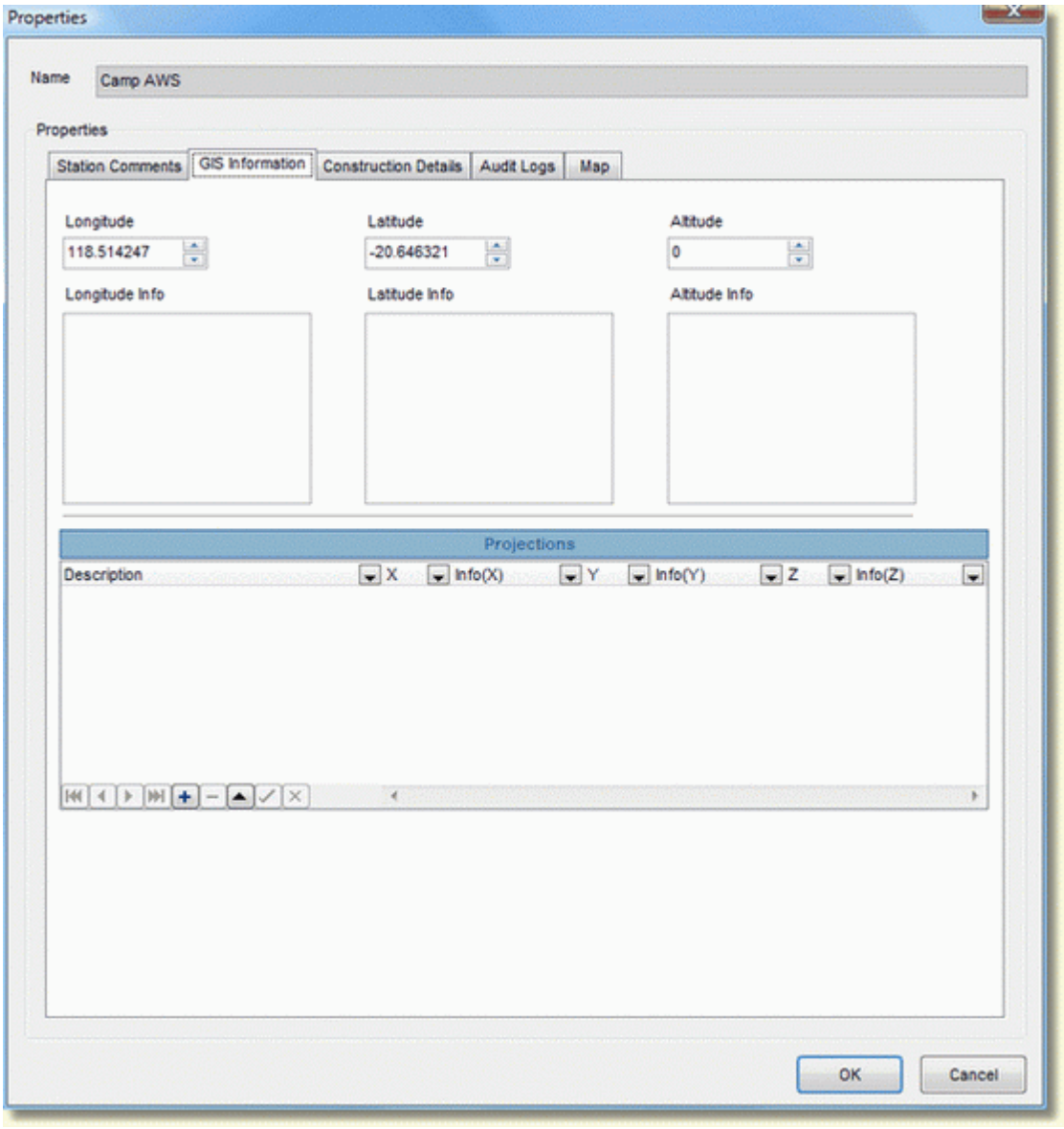

When you have done this you can select the **Map** tab and view the location geographically.

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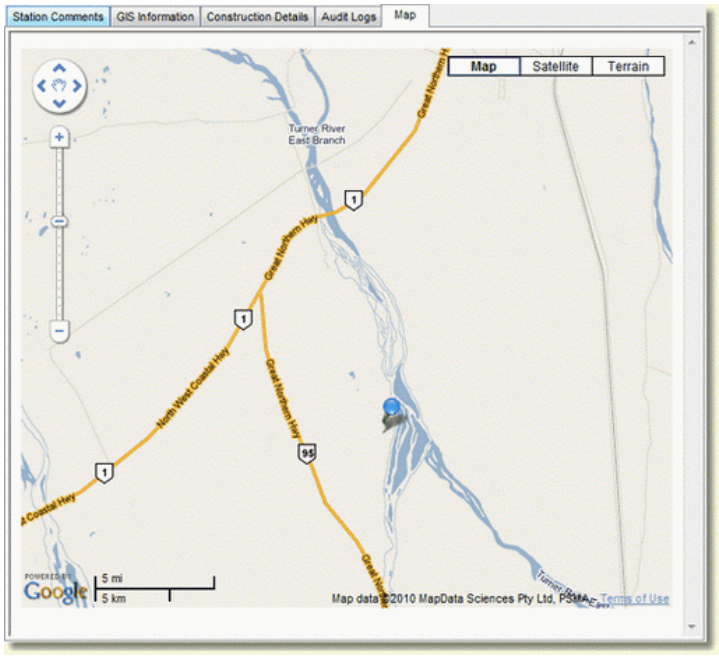

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10 Data

This Chapter covers importing, adding, merging and exporting data.

10.1 Importing data

Before importing data, ensure you check the default Import options under the Options via the Settings menu.

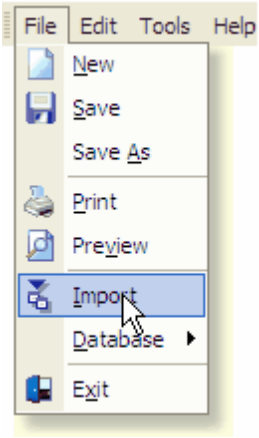
10.1.1 Importing spreadsheet files

1. First, look at the file that you wish to import (the data source) and check that the data variables you wish to import already exist in the DataSight database. If not, you can choose to add them before you begin. Alternatively you can add them in Step 2 of the Import process. Check that your spreadsheet contains a Title Row for all the data fields you wish to import. If not, add titles for your columns, as it will make the subsequent mapping process much easier. Before starting the import process, close the import file.
2. Click

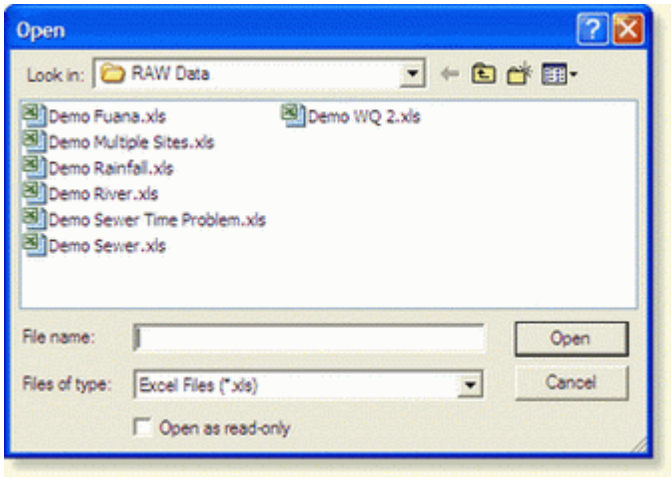
on the DataSight Toolbar.

   Or

   Open the File Menu and Click Import.



   The Open Dialogue box appears.
3. In the Look In drop-down menu, select the folder containing the data file that you wish to import. In the Files of type drop-down menu, click to select *Excel files (*.xls),* then click the file name and click Open.



4. The Import Wizard Step 1 Dialogue box appears.

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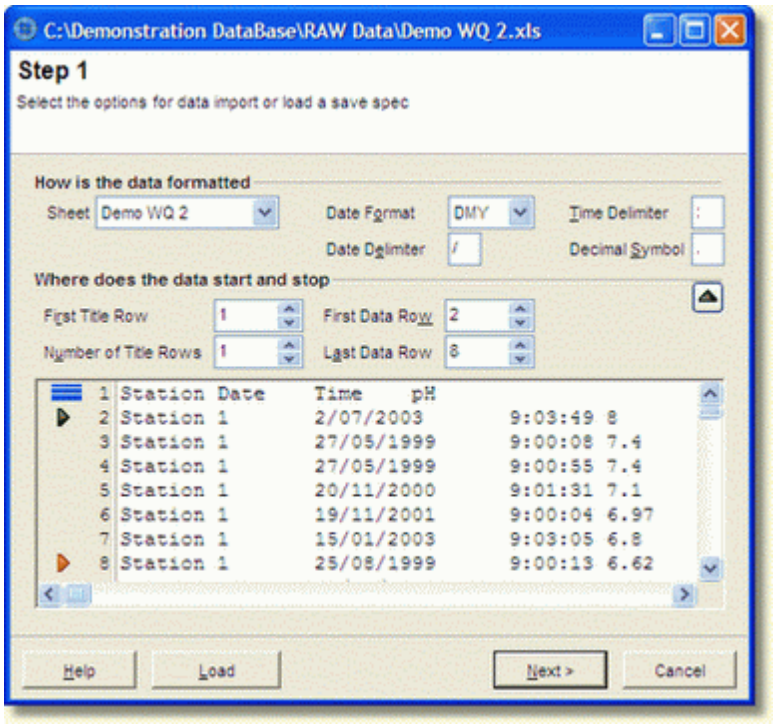
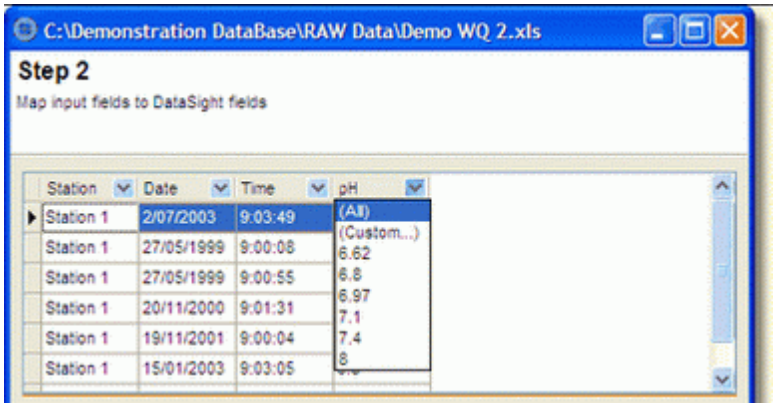

C:\Demonstration DataBase\RAW Data\Demo WQ 2.xls
Step 1
Select the options for data import or load a save spec
How is the data formatted
Sheet Demo WQ 2
Date Format DMY
Time Delimiter :
Date Delimiter /
Decimal Symbol .
Where does the data start and stop
First Title Row 1
First Data Row 2
Number of Title Rows 1
Last Data Row 8
1 Station Date Time pH
2 Station 1 2/07/2003 9:03:49 8
3 Station 1 27/05/1999 9:00:08 7.4
4 Station 1 27/05/1999 9:00:55 7.4
5 Station 1 20/11/2000 9:01:31 7.1
6 Station 1 19/11/2001 9:00:04 6.97
7 Station 1 15/01/2003 9:03:05 6.8
8 Station 1 25/08/1999 9:00:13 6.62
Help
Load
Next >
Cancel

5. In Step 1 you will identify how the import data is formatted and define where the data values start and stop. When importing a spreadsheet you must import and parse each worksheet separately so use the Sheet drop-down menu to select any worksheet.
6. If you have already saved an Import Specification for this type of file and want to use it, click the Load button. Click to select the appropriate specification and click Open. This will load the parameters (including the mapping decisions) that have been saved for that specification. Continue to press Next to preview and move through each subsequent import step.

Otherwise,

7. Set the appropriate Date Format, Time Delimiter, Date Delimiter and the Decimal Symbol formats.
8. Use the scroll arrows to set the First Title Row and Number of Title Rows. will appear next to the first and last Title Row lines in the data panel (if there is no Title Row, leave the Title Row at "0").
9. Scroll down the data panel and identify where the data starts. Position the cursor on the appropriate line number in the data panel and left-click. This will set the position of the First Data Row and will appear next to that line in the data panel. Any values above this row (apart from any set Title rows) will be ignored in the Import process. Continue to scroll down the data panel and identify where the data stops. Right click on the appropriate line number in the data panel to set the position of the Last Data Row and will appear next to that line in the data panel. Any values below this line will be ignored in the Import process.
10. Click the Next button, The Import Wizard Step 2 Dialogue box appears.



11. The Step 2 Dialogue box is divided into upper and lower panels. In the upper panel you can view and filter your existing data fields. In the lower panel you map those input fields to your DataSight database fields. This combination of filtering and mapping functionality means that you can accurately define and import all (or a

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subset) of input data values.

Filtering input values

Filtering is a quick and easy way to define, then import a subset of data. You can use filtering to import only the rows that meet the criteria you specify for a particular column or columns.

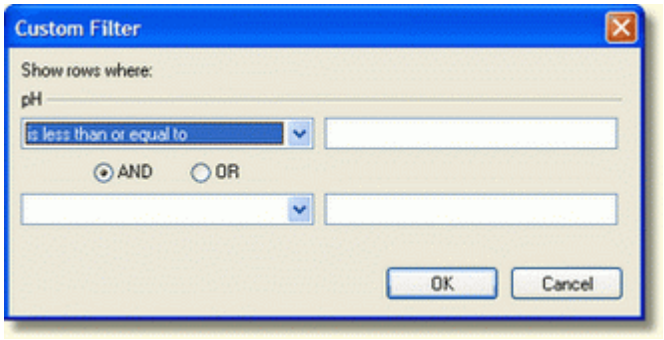
Click at the head of any data column to display a list of filter options. Standard options are All, Custom, Blanks and Non Blanks. The other options are any of the unique data values within that column. (Note that the Blanks and Non Blanks options are available only if the column you want to filter contains a blank cell).

Use	To return
All	all rows
Custom	all rows meeting the criteria you specify for that column
Blanks	only the rows containing blank data values in that column
Non-Blanks	only the rows containing non-blank data values in that column
Unique data value	all the rows containing the specified data value in that column

Custom filtering using specified criteria

Click at the head of any data column and select Custom.

The custom filter dialogue box appears



Click the first arrow to display the drop down menu options for filtering either numeric and text values.

Select a filter condition then enter an appropriate value in the box on the right

If you need to find values that share some characters (whether text or numeric) use the *like* or *not like* options in conjunction with either " _ " or "%":

Use	To stand in for
_ (underscore)	any single character • e.g., " 8_ " will find "81", "82", "83", "8B" etc • e.g., "8_ _" will find "845", "87A" etc • e.g., "T_" will find "TP", "TN", "T3" etc
% (percent)	any number of character • e.g. "8%" will find "81", "82456", "8B" etc • e.g. "fish%" will find "fish", "fished" "fishing", "fishA1" etc

To add another criteria, click AND or OR, and repeat the previous step.

12. In the Step 2 Dialogue box lower panel you will map your input fields to your DataSight database fields.

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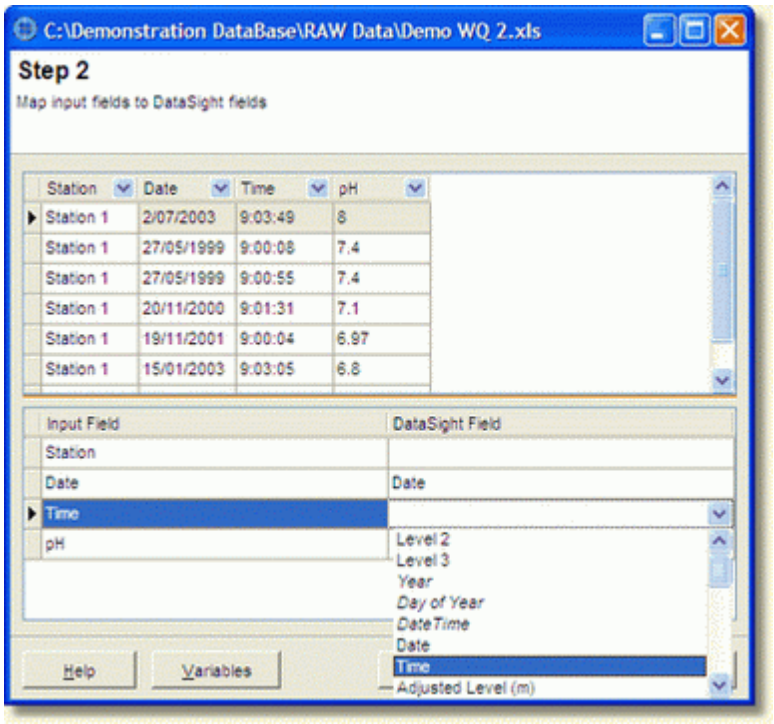
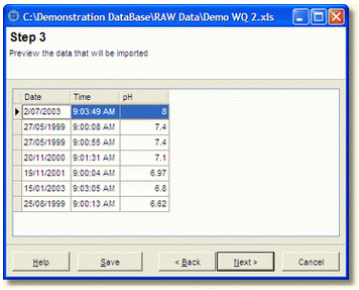
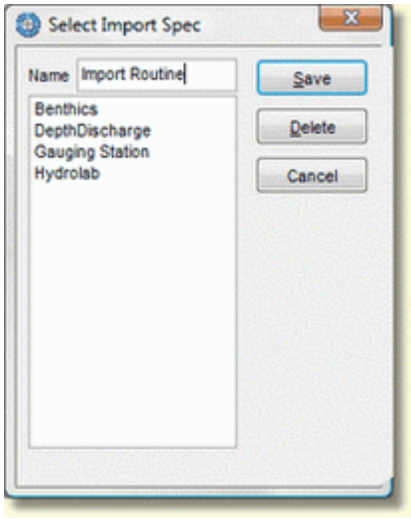


13. The left column lists your Input field names. Click in each adjacent line in the right column to access the drop-down list and select an existing DataSight field to map each Input field to. Note that if appropriate the DataSight field does not already exist, You can click the Variables button and add the variable. Then close the Define Variable dialogue box to return to Import Wizard Step 2 dialogue box. No unmapped fields will be imported.
14. When you have mapped all the fields, click the Next button. The Import Wizard Step 3 dialogue box appears.
15. In Step 3 you will be previewing the data you are importing. This is also where you may Save the Import Specification to save repeating earlier steps when importing similar data.



Saving the Import Routine



16. If you are happy with the data press Next, otherwise press Back and make the necessary changes.
17. The Import Wizard Step 4 dialogue box appears.

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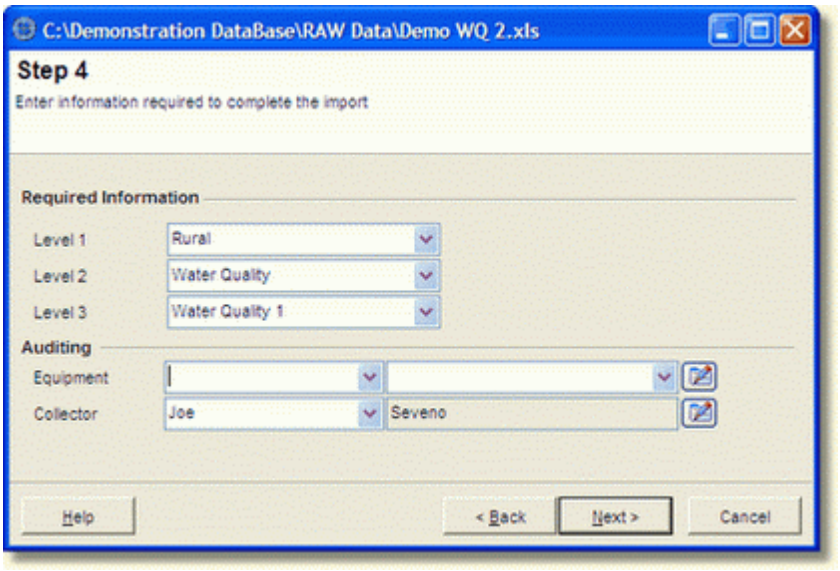
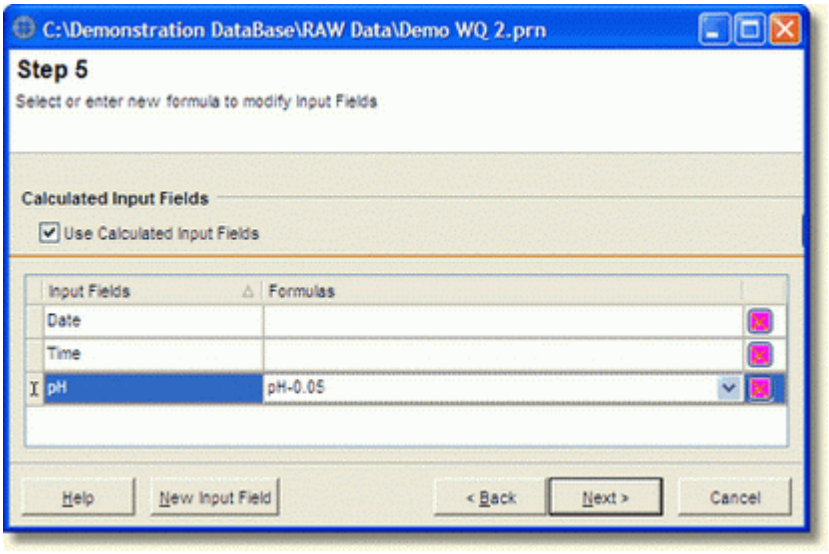


18. Select the appropriate Level 1, Level 2 and Level 3 from the drop-down boxes. If you have not already set these up you may type a name directly into the blank field. In this case, you will be asked to confirm that you wish to add the new Level 1, Level 2, Level 3. Click Yes.
19. The fields marked Date, Time and Increment are only used if you have data which does not already have Date and Time values recorded (it is the Date and Time value that makes each data record unique). In this case, you can use this section of the dialogue box to set default level 4 Date and Start Time values together with the increment at which the time values will be added.
20. If you wish to add an Audit Trail, click the drop-down boxes for Equipment and Collector and make a selection. **Note:** if security has required that you log on as the current user, it is your name that will appear as the default Collector.
21. Click Next.
22. The Wizard Step 5 dialogue box. In Step 5 you can undertake simple conversions on the data during the import. This feature can be used to add set offsets to data or convert data from raw to scientific units for example.
23. Step 5 is activated by ticking the box above the Input Fields. The Input Fields column is populated.



24. Type in the conversion for the given Input Field you wish to modify in the appropriate Formula cell. This will place the modified data into the variable field that was mapped for that input field in Step 2. Leave blank if there are no calculations.
25. Alternatively add a New Input Field. The Add New Input Field dialogue box appears.

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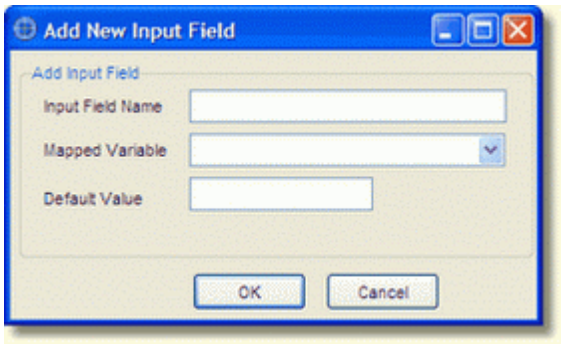
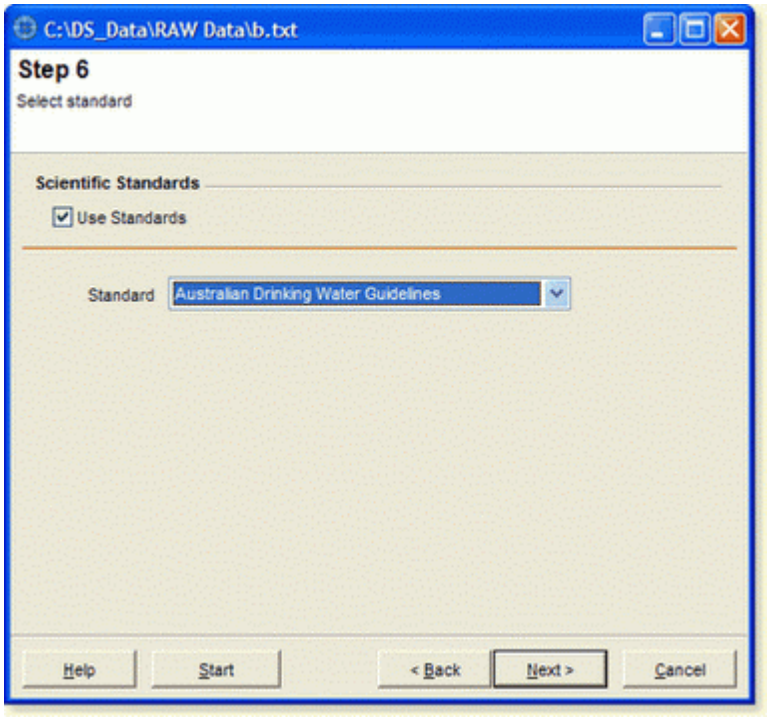


26. Type in your new Input Field Name. Choose a variable to map the new data to from the drop down menu for Mapped Variable. Note that a different variable from that of the raw data should be used if both the raw data and modified data are to be imported. This variable must already exist within the variable table prior to Step 5. If not, please return to Step 2 and create the new variable. Insert a default value if you wish. Click Ok.
27. Type in the conversion for the New Input Field in the corresponding Formula cell. Include the input field name(s) already present in the table and use standard mathematical nomenclature.
28. Step 6 offers the chance to select a Scientific Standard to check whether imported data is within the standard limits or not. If you wish to use a Standard, check the box and select a Standard from the list. Otherwise click **Next**.



29. Click the Finish button.

    If your import is successful, a confirmation information box will display. Alternatively an Import Error Log will be displayed with appropriate error messages and options to Save, Print, Preview, Go Back, Continue or Abort the Import.

When importing data, if the first line in the file is Data and not column header leave “First Title Line” as “0”. This ensures that the Input Fields (as in the example above) are named as Field 1,2,3,4 etc. If numerical values are in the Input Fields your calculation will be incorrect. The user can also use multiple fields to calculate a new variable. For example, Flow * Total Dissolved Solids to give an instantaneous discharge of TDS.

In Step 4 the user selects the Level 3 that the data is to be imported too. The mapping of Level 3 allows DataSight to link and save the formulas used for that specific site. The Formula area is populated with the last used formula for that specific site. This increases the speed of importing.

You can save your Import Spec to use again with the same type of file. Click the Save button and the Save Spec dialogue box appears. Type in a description and click Ok.

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10.1.2 Importing other delimited files

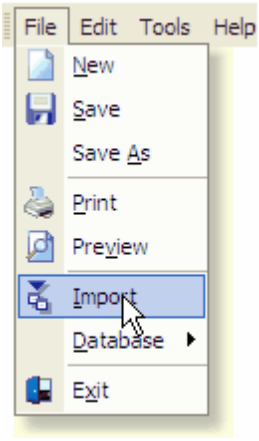
1. First, look at the file that you wish to import (the data source) and check that the data variables you wish to import already exist in the DataSight database. If not, you can choose to add variables before you begin. Alternatively you can add them in Step 2 of the Import process. Check that your file contains a Title Row for all the data fields you wish to import. If not, you may wish to add titles, as it will make the subsequent mapping process much easier. Before starting the import process, close the file which is to be imported.

2. Click

on the DataSight Toolbar.

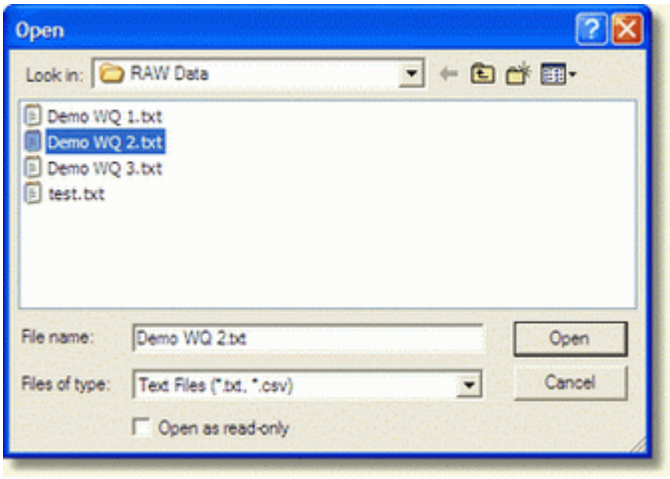
   Or

   Open the File Menu and Click Import.



   The Open Dialogue box appears

3. In the Look In drop-down menu, select the folder containing the data file that you wish to import. In the Files of type drop-down menu, click to select *Text files (*.csv, *.txt),* then click the file name and click Open.



4. The Import Wizard Step 1 Dialogue box appears.

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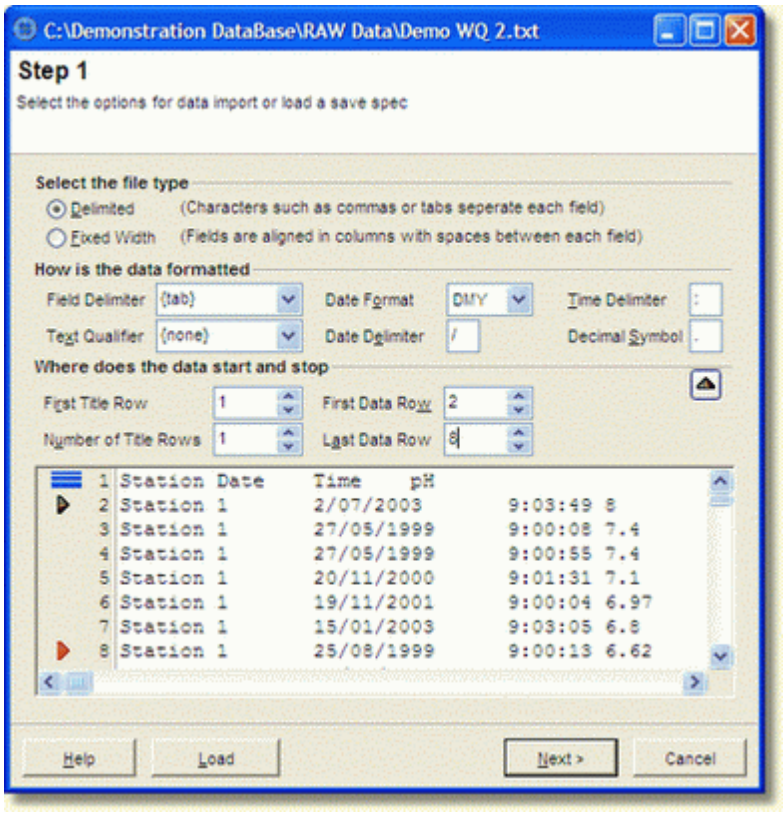
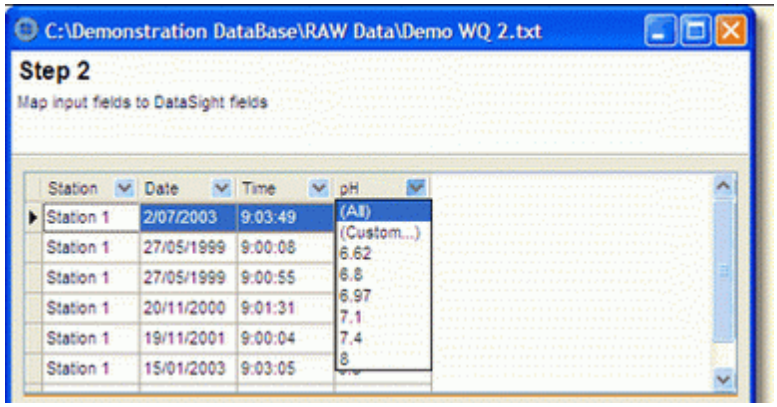

C:\Demonstration DataBase\RAW Data\Demo WQ 2.txt
Step 1
Select the options for data import or load a save spec
Select the file type
Delimited (Characters such as commas or tabs seperate each field)
Fixed Width (Fields are aligned in columns with spaces between each field)
How is the data formatted
Field Delimiter {tab}
Date Format DMY
Time Delimiter :
Text Qualifier {none}
Date Delimiter /
Decimal Symbol .
Where does the data start and stop
First Title Row 1
First Data Row 2
Number of Title Rows 1
Last Data Row 8
1 Station Date Time pH
2 Station 1 2/07/2003 9:03:49 8
3 Station 1 27/05/1999 9:00:08 7.4
4 Station 1 27/05/1999 9:00:55 7.4
5 Station 1 20/11/2000 9:01:31 7.1
6 Station 1 19/11/2001 9:00:04 6.97
7 Station 1 15/01/2003 9:03:05 6.8
8 Station 1 25/08/1999 9:00:13 6.62
Help
Load
Next >
Cancel

5. In Step 1 you will identify how the import data is formatted and define where the data values start and stop.
6. If you have already saved an Import Specification for this type of file and want to use it, click the Load button. Click to select the appropriate specification and click Open. This will load the parameters (including the mapping decisions) that have been saved for that specification. Continue to press Next to preview and move through each subsequent import step.

Otherwise,

7. Set the appropriate Date Format, Time Delimiter, Date Delimiter and the Decimal Symbol formats.
8. Use the scroll arrows to set the First Title Row and Number of Title Rows. will appear next to the first and last Title Row lines in the data panel (if there is no Title Row, leave the Title Row at "0").
9. Scroll down the data panel and identify where the data starts. Position the cursor on the appropriate line number in the data panel and left-click. This will set the position of the First Data Row and will appear next to that line in the data panel. Any values above this row (apart from any set Title rows) will be ignored in the Import process. Continue to scroll down the data panel and identify where the data stops. Right click on the appropriate line number in the data panel to set the position of the Last Data Row and will appear next to that line in the data panel. Any values below this line will be ignored in the Import process.
10. Click the Next button, The Import Wizard Step 2 Dialogue box appears.



11. The Step 2 Dialogue box is divided into upper and lower panels. In the upper panel you can view and filter your existing data fields. In the lower panel you map those input fields to your DataSight database fields. This combination of filtering and mapping functionality means that you can accurately define and import all (or a subset) of input data values.

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Filtering input values

Filtering is a quick and easy way to define, then import a subset of data. You can use filtering to import only the rows that meet the criteria you specify for a particular column or columns.

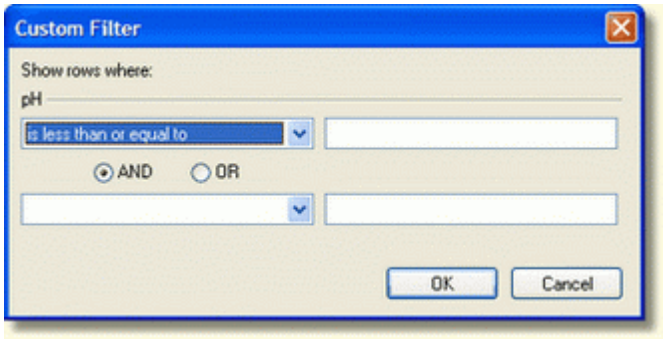
Click at the head of any data column to display a list of filter options. Standard options are All, Custom, Blanks, and Non Blanks. The other options are any of the unique data values within that column. (Note that the Blanks and Non Blanks options are available only if the column you want to filter contains a blank cell).

Use	To return
All	all rows
Custom	all rows meeting the criteria you specify for that column
Blanks	only the rows containing blank data values in that column
Non-Blanks	only the rows containing non-blank data values in that column
Unique data value	all the rows containing the specified data value in that column

Custom filtering using specified criteria

Click at the head of any data column and select Custom.

The custom filter dialogue box appears



Click the first arrow to display the drop down menu options for filtering either numeric and text values.

Select a filter condition then enter an appropriate value in the box on the right

If you need to find values that share some characters (whether text or numeric) use the *like* or *not like* options in conjunction with either " _ " or "%":

Use	To stand in for
_ (underscore)	any single character • e.g., " 8_ " will find "81", "82", "83", "8B" etc • e.g., "8_ _" will find "845", "87A" etc • e.g., "T_" will find "TP", "TN", "T3" etc
% (percent)	any number of character • e.g. "8%" will find "81", "82456", "8B" etc • e.g. "fish%" will find "fish", "fished" "fishing", "fishA1" etc

To add another criteria, click AND or OR, and repeat the previous step.

12. In the Step 2 Dialogue box lower panel you will map your input fields to your DataSight database fields.

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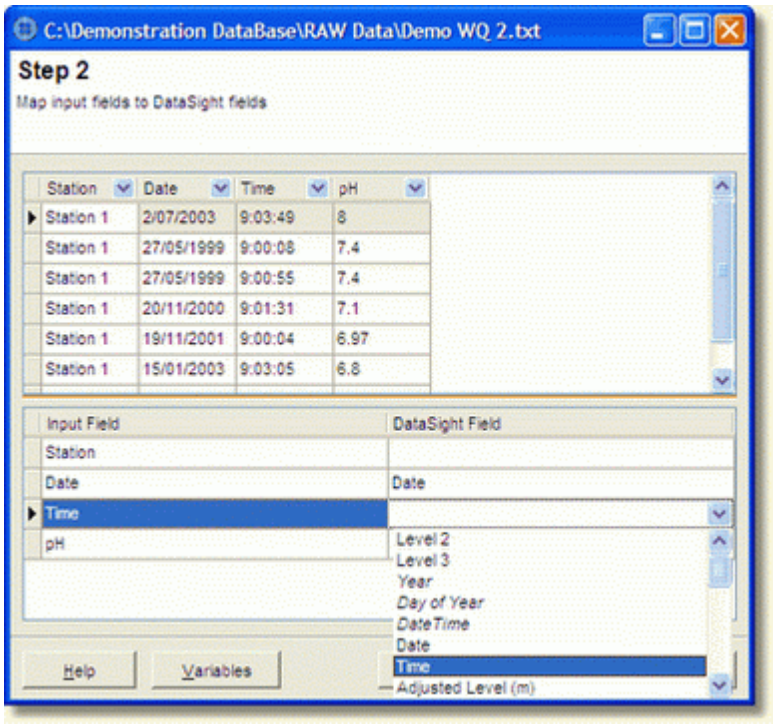
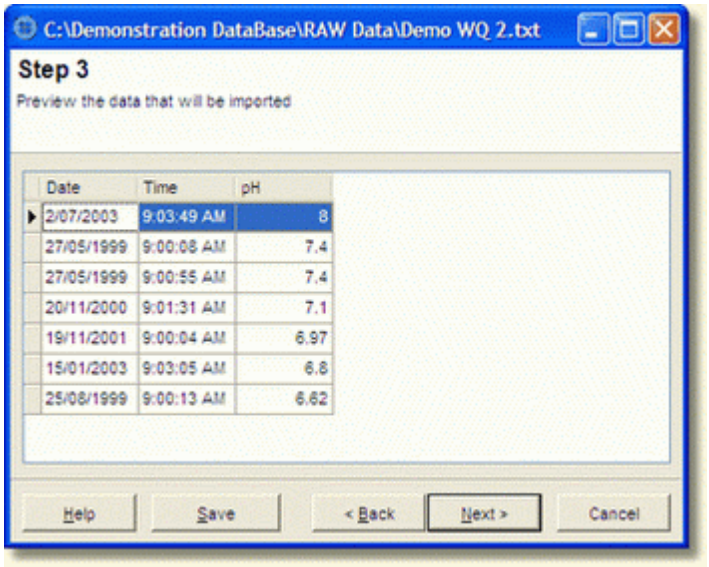


13. The left column lists your Input field names. Click in each adjacent line in the right column to access the drop-down list and select an existing DataSight field to map each Input field to. Note that if appropriate the DataSight field does not already exist, You can click the Variables button and add the variable. Then close the Define Variable dialogue box to return to Import Wizard Step 2 dialogue box. No unmapped fields will be imported.
14. When you have mapped all the fields, click the Next button. The Import Wizard Step 3 dialogue box appears.
15. In Step 3 you will be previewing the data you are importing.



16. If you are happy with the data press Next, otherwise press Back and make the necessary changes.
17. The Wizard Step 4 dialogue box appears.

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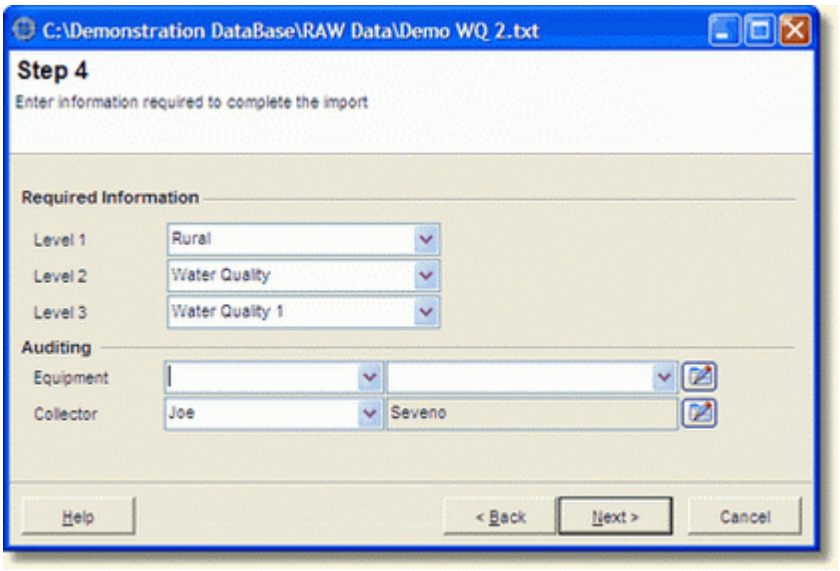
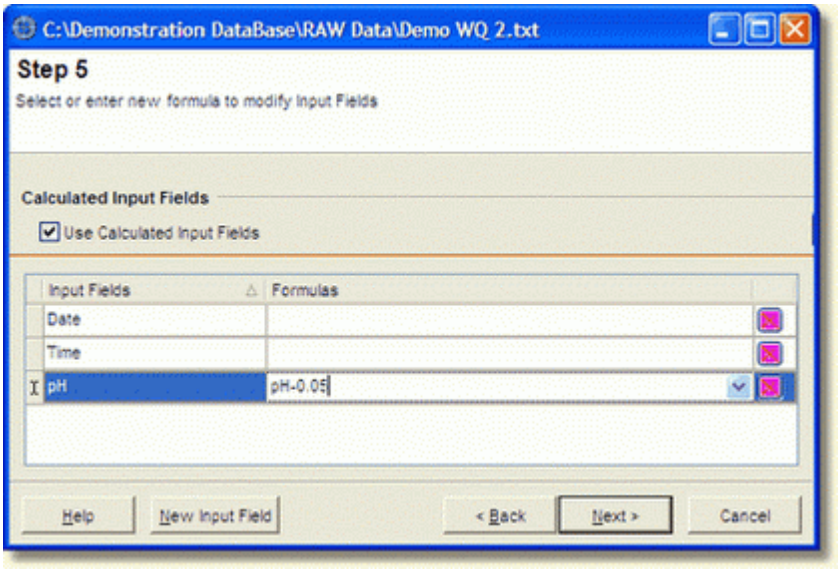


18. Select the appropriate Level 1, Level 2 and Level 3 from the drop-down boxes. If you have not already set these up you may type a name directly into the blank field. In this case, you will be asked to confirm that you wish to add the new Level 1, Level 2, Level 3. Click Yes.
19. The fields marked Date, Time and Increment are only used if you have data which does not already have Date and Time values recorded (it is the Date and Time value that makes each data record unique). In this case, you can use this section of the dialogue box to set default level 4 Date and Start Time values together with the increment at which the time values will be added.
20. If you wish to add an Audit Trail, click the drop-down boxes for Equipment and Collector and make a selection. Note that if security has required that you log on as the current user, it is your name that will appear as the default Collector. Click Next.
21. The Wizard Step 5 dialogue box. In Step 5 you can undertake simple conversions on the data during the import. This feature can be used to add set offsets to data or convert data from raw to scientific units for example.
22. Step 5 is activated by ticking the box above the Input Fields. The Input Fields column is populated.



23. Type in the conversion for the given Input Field you wish to modify in the appropriate Formula cell. This will place the modified data into the variable field that was mapped for that input field in Step 2. Leave blank if there are no calculations.
24. Alternatively add a New Input Field. The Add New Input Field dialogue box appears.

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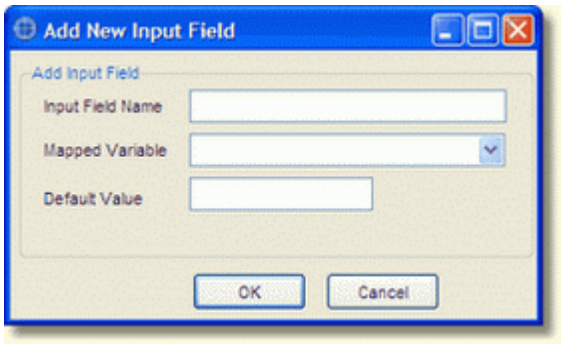
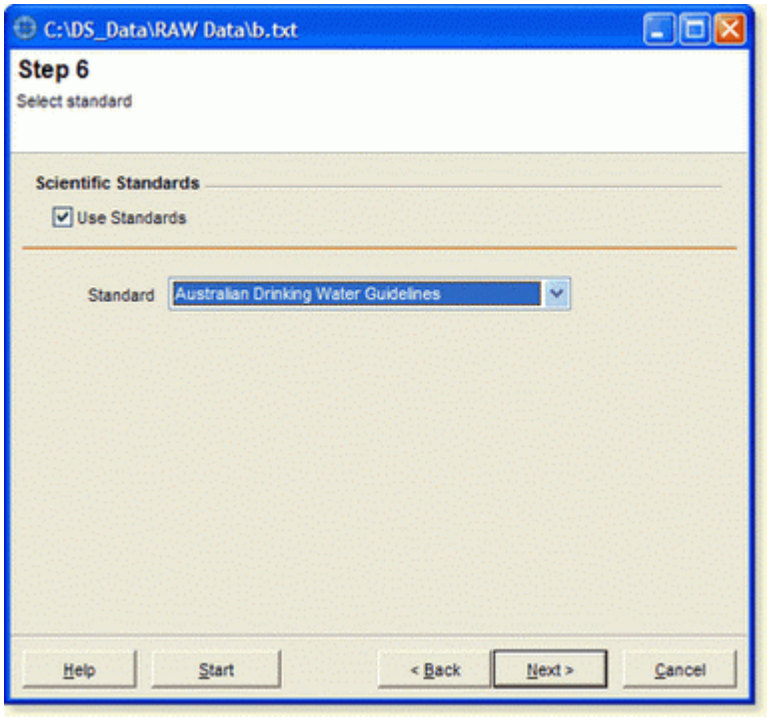


25. Type in your new Input Field Name. Choose a variable to map the new data to from the drop down menu for Mapped Variable. Note that a different variable from that of the raw data should be used if both the raw data and modified data are to be imported. This variable must already exist within the variable table prior to Step 5. If not, please return to Step 2 and create the new variable. Insert a default value if you wish. Click Ok.
26. Type in the conversion for the New Input Field in the corresponding Formula cell. Include the input field name(s) already present in the table and use standard mathematical nomenclature.
27. Step 6 offers the chance to select a Scientific Standard to check whether imported data is within the standard limits or not. If you wish to use a Standard, check the box and select a Standard from the list. Otherwise click **Next**.



28. Click the Finish button.

    If your import is successful, a confirmation information box will display. Alternatively an Import Error Log will be displayed with appropriate error messages and options to Save, Print, Preview, Go Back, Continue or Abort the Import.

When importing data, if the first line in the file is Data and not column header leave “First Title Line” as “0”. This ensures that the Input Fields (as in the example above) are named as Field 1,2,3,4 etc. If numerical values are in the Input Fields your calculation will be incorrect. The user can also use multiple fields to calculate a new variable. For example, Flow * Total Dissolved Solids to give an instantaneous discharge of TDS.

In Step 4 the user selects the Level 3 that the data is to be imported too. The mapping of Level 3 allows DataSight to link and save the formulas used for that specific site. The Formula area is populated with the last used formula for that specific site. This increases the speed of importing.

You can save your Import Spec to use again with the same type of file. Click the Save button and the Save Spec dialogue box appears. Type in a description and click Ok.

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10.1.3 Importing fixed width files

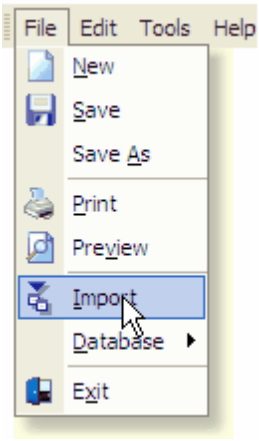
1. First, look at the file that you wish to import (the data source) and check that the data variables you wish to import already exist in the DataSight database. If not, you can choose to add them before you begin. Alternatively you can add them in Step 2 of the Import process. Before starting the import process, close the import file.

2. Click

on the DataSight Toolbar. .

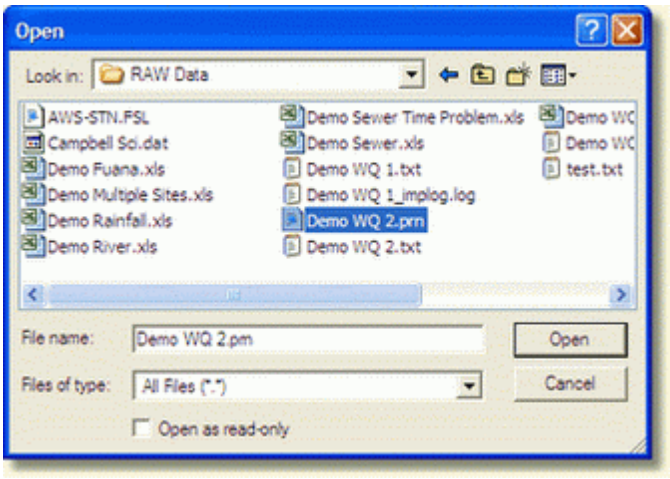
   Or

   Open the File Menu and Click Import.



   The Open Dialogue box appears

3. In the Look In drop-down menu, select the folder containing the data file that you wish to import. In the Files of type drop-down menu, click to select *All Files (*.dat, *.prn)* then click the file name and click Open.



4. The Import Wizard Step 1 Dialogue box appears.

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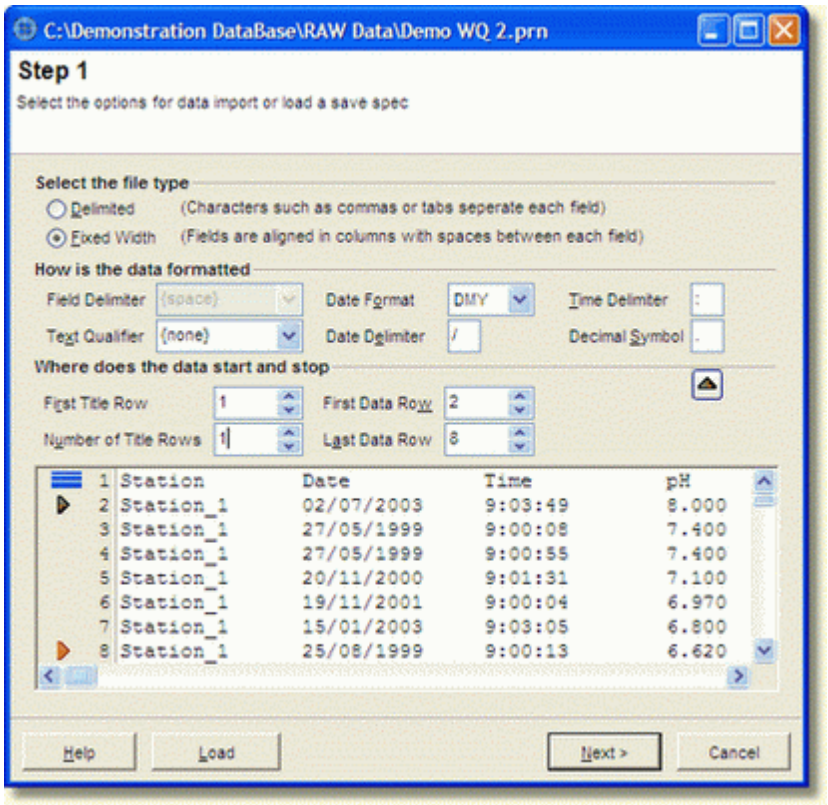
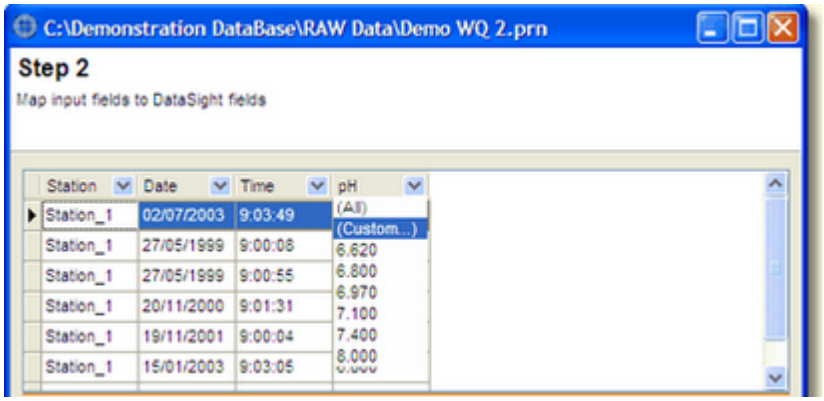

C:\Demonstration DataBase\RAW Data\Demo WQ 2.prn
Step 1
Select the options for data import or load a save spec
Select the file type
Delimited (Characters such as commas or tabs seperate each field)
Fixed Width (Fields are aligned in columns with spaces between each field)
How is the data formatted
Field Delimiter {space}
Date Format DMY
Time Delimiter :
Text Qualifier {none}
Date Delimiter /
Decimal Symbol .
Where does the data start and stop
First Title Row 1
First Data Row 2
Number of Title Rows 1
Last Data Row 8
1 Station Date Time pH
2 Station_1 02/07/2003 9:03:49 8.000
3 Station_1 27/05/1999 9:00:08 7.400
4 Station_1 27/05/1999 9:00:55 7.400
5 Station_1 20/11/2000 9:01:31 7.100
6 Station_1 19/11/2001 9:00:04 6.970
7 Station_1 15/01/2003 9:03:05 6.800
8 Station_1 25/08/1999 9:00:13 6.620
Help
Load
Next >
Cancel

5. In Step 1 you will identify how the import data is formatted and define where the data values start and stop.
6. If you have already saved an Import Specification for this type of file and want to use it, click the Load button. Click to select the appropriate specification and click Open. This will load the parameters (including the mapping decisions) that have been saved for that specification. Continue to press Next to preview and move through each subsequent import step.

Otherwise,

7. Click the Fixed Width radio button. Set the appropriate Date Format, Time Delimiter, Date Delimiter and the Decimal Symbol formats.
8. Use the scroll arrows to set the First Title Row and Number of Title Rows. will appear next to the first and last Title Row lines in the data panel (if there is no Title Row, leave the Title Row at "0").
9. Scroll down the data panel and identify where the data starts. Position the cursor on the appropriate line number in the data panel and left-click. This will set the position of the First Data Row and will appear next to that line in the data panel. Any values above this row (apart from any set Title rows) will be ignored in the Import process. Continue to scroll down the data panel and identify where the data stops. Right click on the appropriate line number in the data panel to set the position of the Last Data Row and will appear next to that line in the data panel. Any values below this line will be ignored in the Import process.
10. Click the Next button, The Import Wizard Step 2 Dialogue box appears.



11. The Step 2 Dialogue box is divided into upper and lower panels. In the upper panel you can view and filter your existing data fields. In the lower panel you map those input fields to your DataSight database fields. This combination of filtering and mapping functionality means that you can accurately define and import all (or a

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subset) of input data values.

Filtering input values

Filtering is a quick and easy way to define and then import a subset of data. You can use filtering to import only the rows that meet the criteria you specify for a particular column or columns.

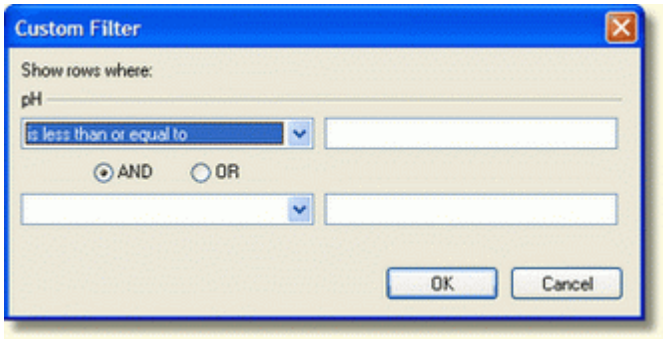
Click at the head of any data column to display a list of filter options. Standard options are All, Custom, Blanks, and Non Blanks. The other options are any of the unique data values within that column. (Note that the Blanks and Non Blanks options are available only if the column you want to filter contains a blank cell).

Use	To return
All	all rows
Custom	all rows meeting the criteria you specify for that column
Blanks	only the rows containing blank data values in that column
Non-Blanks	only the rows containing non-blank data values in that column
Unique data value	all the rows containing the specified data value in that column

Custom filtering using specified criteria

Click at the head of any data column and select Custom.

The custom filter dialogue box appears



Click the first arrow to display the drop down menu options for filtering either numeric and text values.

Select a filter condition then enter an appropriate value in the box on the right

If you need to find values that share some characters (whether text or numeric) use the *like* or *not like* options in conjunction with either " _ " or "%":

Use	To stand in for
_ (underscore)	any single character • eg, " 8_ " will find "81", "82", "83", "8B" etc • eg, "8_ _" will find "845", "87A" etc • eg, "T_" will find "TP", "TN", "T3" etc
% (percent)	any number of character • eg "8%" will find "81", "82456", "8B" etc • eg "fish%" will find "fish", "fished" "fishing", "fishA1" etc

To add another criteria, click AND or OR, and repeat the previous step.

12. In the Step 2 Dialogue box lower panel DataSight will attempt to recognize the fixed width parameters of your input file but you will need to review and adjust these. Click in a row of the Start column and type the start position of the first character relating to that Input Field of data. Click in the corresponding Width column and type the number of characters that comprise the width of that Input Field.

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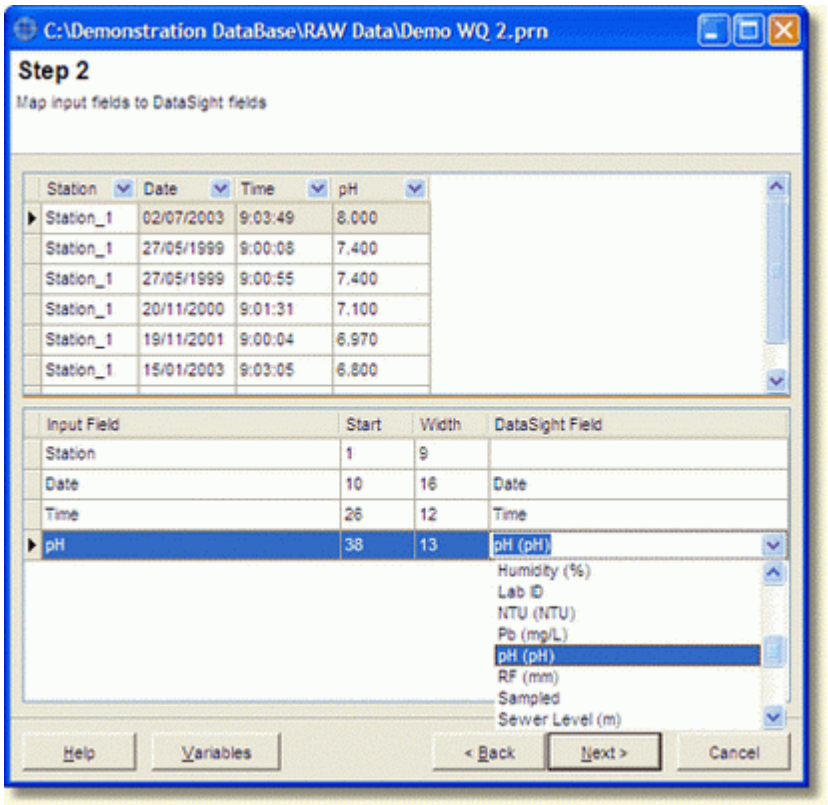
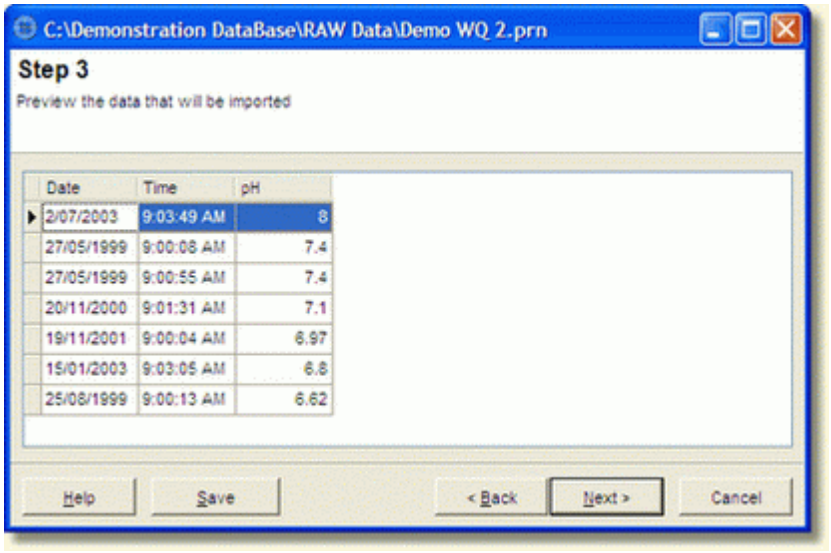


13. The left column lists your Input field names. Click in each adjacent line in the right column to access the drop-down list and select an existing DataSight field to map each Input field to. Note that if the appropriate DataSight field does not already exist, you can click the Variables button and add the variable. Then close the Define Variable dialogue box to return to Import Wizard Step 2 dialogue box. No unmapped fields will be imported.
14. When you have mapped all the fields, click the Next button. The Import Wizard Step 3 dialogue box appears.
15. In Step 3 you will be previewing the data you are importing.



16. If you are happy with the data press Next, otherwise press Back and make the necessary changes.
17. The Wizard Step 4 dialogue box appears.

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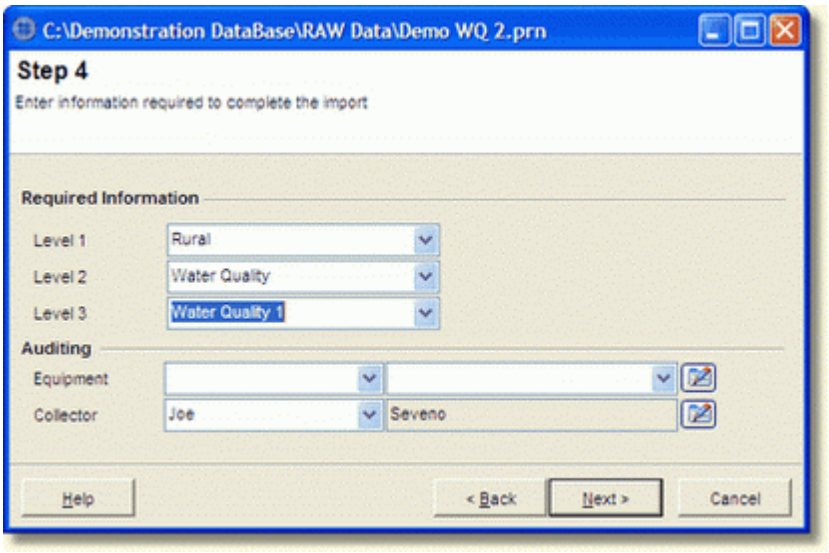
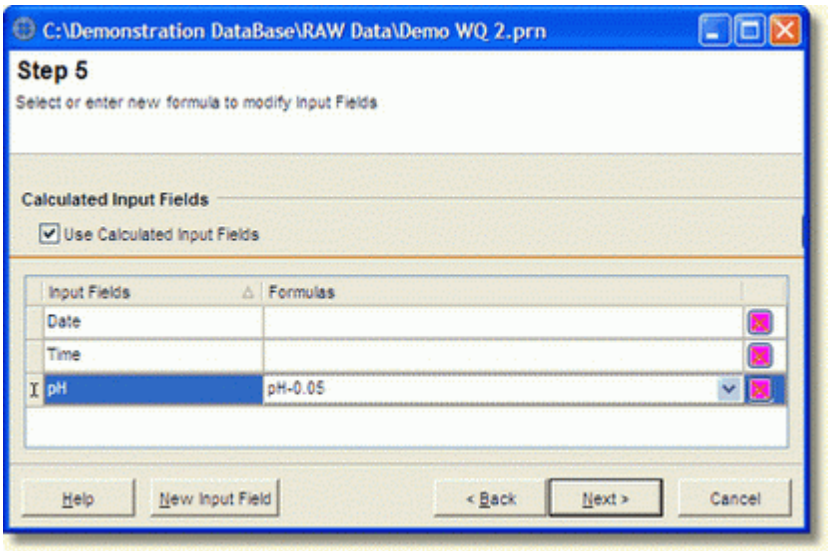


18. Select the appropriate Level 1, Level 2 and Level 3 from the drop-down boxes. If you have not already set these up you may type a name directly into the blank field. In this case, you will be asked to confirm that you wish to add the new Level 1, Level 2, Level 3. Click Yes.
19. The fields marked Date, Time and Increment are only used if you have data which does not already have Date and Time values recorded (it is the Date and Time value that makes each data record unique). In this case, you can use this section of the dialogue box to set default level 4 Date and Start Time values together with the increment at which the time values will be added.
20. If you wish to add an Audit Trail, click the drop-down boxes for Equipment and Collector and make a selection. Note that if security has required that you log on as the current user, it is your name that will appear as the default Collector. Click Next.
21. The Wizard Step 5 dialogue box. In Step 5 you can undertake simple conversions on the data during the import. This feature can be used to add set offsets to data or convert data from raw to scientific units for example.
22. Step 5 is activated by ticking the box above the Input Fields. The Input Fields column is populated.



23. Type in the conversion for the given Input Field you wish to modify in the appropriate Formula cell. This will place the modified data into the variable field that was mapped for that input field in Step 2. Leave blank if there are no calculations.
24. Alternatively add a New Input Field. The Add New Input Field dialogue box appears.

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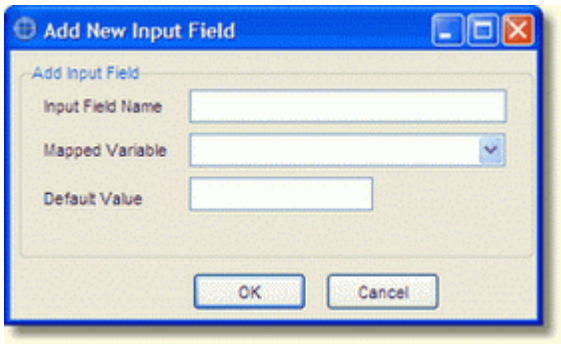
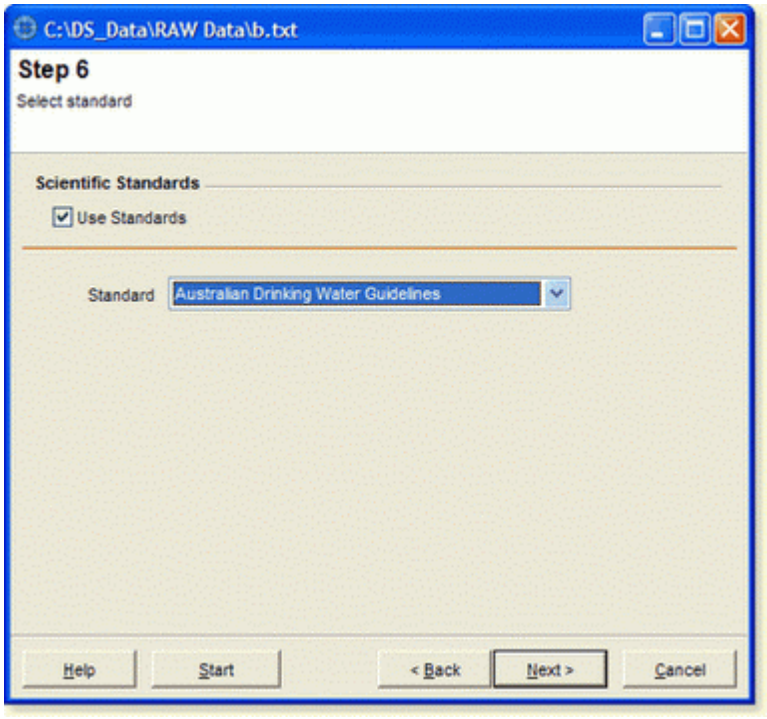


25. Type in your new Input Field Name. Choose a variable to map the new data to from the drop down menu for Mapped Variable. Note that a different variable from that of the raw data should be used if both the raw data and modified data are to be imported. This variable must already exist within the variable table prior to Step 5. If not, please return to Step 2 and create the new variable. Insert a default value if you wish. Click Ok.
26. Type in the conversion for the New Input Field in the corresponding Formula cell. Include the input field name(s) already present in the table and use standard mathematical nomenclature.
27. Step 6 offers the chance to select a Scientific Standard to check whether imported data is within the standard limits or not. If you wish to use a Standard, check the box and select a Standard from the list. Otherwise click **Next**.



28. Click the Finish button.

    If your import is successful, a confirmation information box will display. Alternatively an Import Error Log will be displayed with appropriate error messages and options to Save, Print, Preview, Go Back, Continue or Abort the Import.

When importing data, if the first line in the file is Data and not column header leave “First Title Line” as “0”. This ensures that the Input Fields (as in the example above) are named as Field 1,2,3,4 etc. If numerical values are in the Input Fields your calculation will be incorrect. The user can also use multiple fields to calculate a new variable. For example, Flow * Total Dissolved Solids to give an instantaneous discharge of TDS.

In Step 4 the user selects the Level 3 that the data is to be imported too. The mapping of Level 3 allows DataSight to link and save the formulas used for that specific site. The Formula area is populated with the last used formula for that specific site. This increases the speed of importing.

You can save your Import Spec to use again with the same type of file. Click the Save button and the Save Spec dialogue box appears. Type in a description and click Ok.

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10.1.4 Receiving a .dsd file

If another user has sent you a .dsd file

1. Right-click on the .dsd file and select Save As.
2. Navigate to the location where you wish to save the file and click the Save button.

Then, you can either:

Merge the data into your currently open DataSight database.

or

Create a new database from the dsd file.

DataSight .dsd files are only compatible with DataSight Desktop and NOT DataSight Enterprise.

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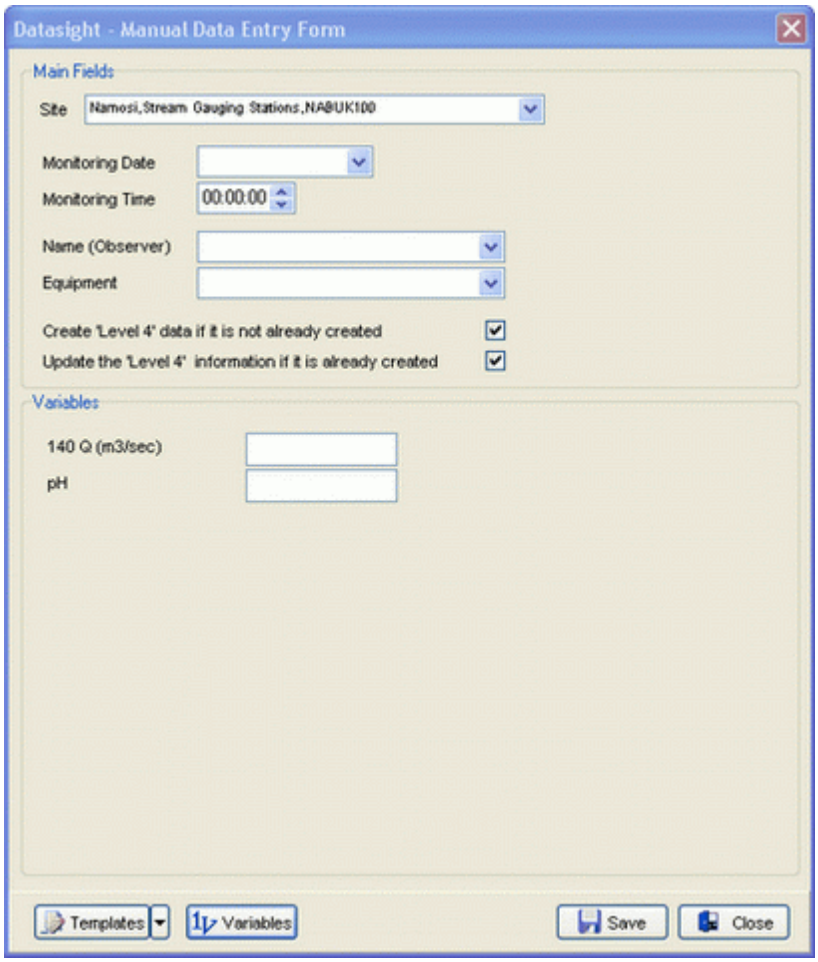
10.2 Manual Data Entry (MDE)

As well as importing data you can also manually enter data against an existing Level 3. Manual Data Entry (MDE) can replicate your field datasheets so data can be keyed in quickly.

To add data

1. Click MDE on the DataSight toolbar and the Manual Data Entry form appears.



2. Click on the drop down Site menu and choose a Level 3.
3. Enter the Monitoring Date and Monitoring Time.
4. Alternatively, you can **Create 'Level 4' data if not already created** or **Update the 'Level 4' information** if it has already been created, by ticking the appropriate check boxes.
5. Choose the **Name (Observer)** and **Equipment** used for the Audit trail.
6. If you wish, you can save your MDE electronic form under Templates. Click on the to also select saved forms.
7. Click on Variables to open the Variables Selection form.

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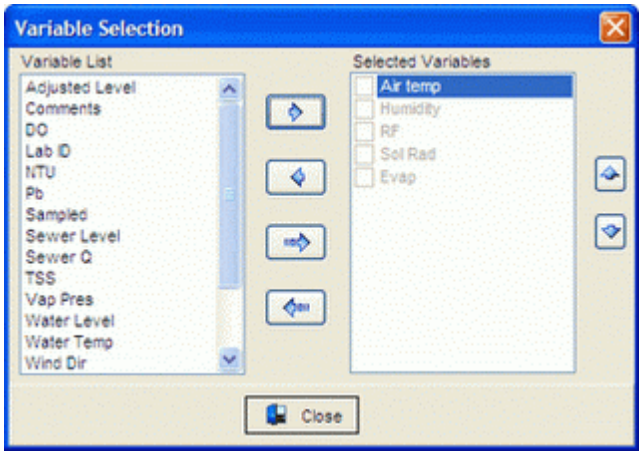

8. Select the Variables from the Variable List that will appear on the form using the arrowed selection buttons.
9. Define the order of the variables on the form using the Up and Down arrows to the Right of the Selected Variables List.
10. Click Close and return to the Manual Data Entry Form.
11. Enter data for each variable in the boxes shown. Click Save.
12. When you have finished entering data click Close.

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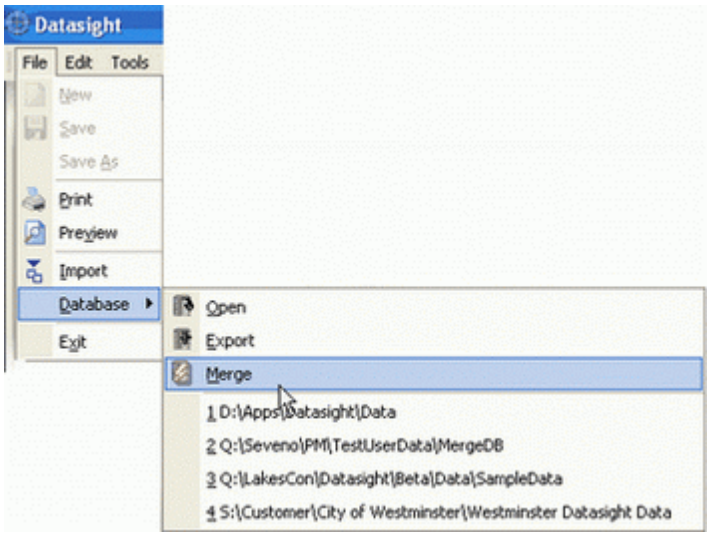
10.3 Merging a database

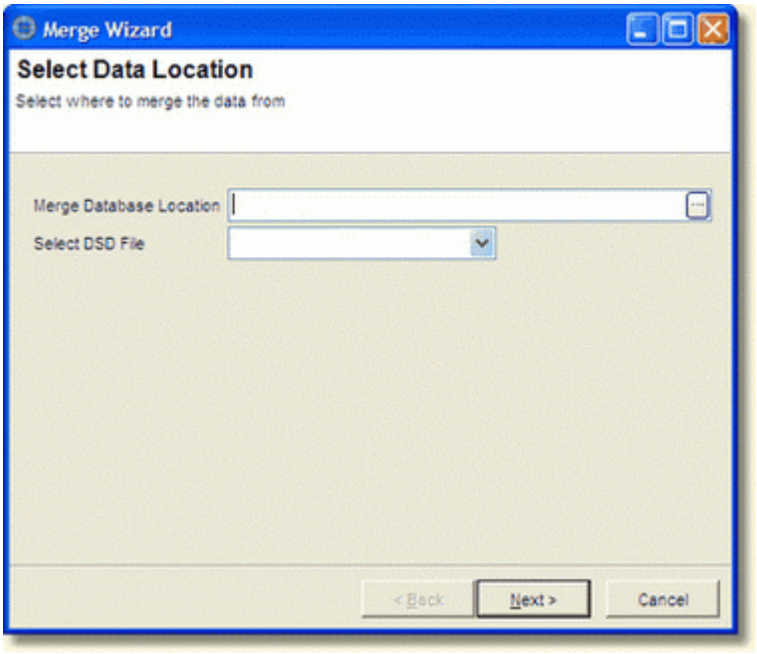
Merging is available in DataSight Desktop only.

You can also receive a DataSight Desktop database from another source and merge the data into your own database.

1. Click File, Database, Merge.



The Merge Wizard dialogue box appears.



2. Click and navigate to the folder location containing the DataSight database files you wish to merge.
3. If you have a .dsd file, select it from the Select DSD File drop-down box. Otherwise leave the Select DSD File blank. Click Next.
4. Use the checkboxes to select the Level 1, Level 2, Level 3 and Level 4 you wish to merge and click Next.

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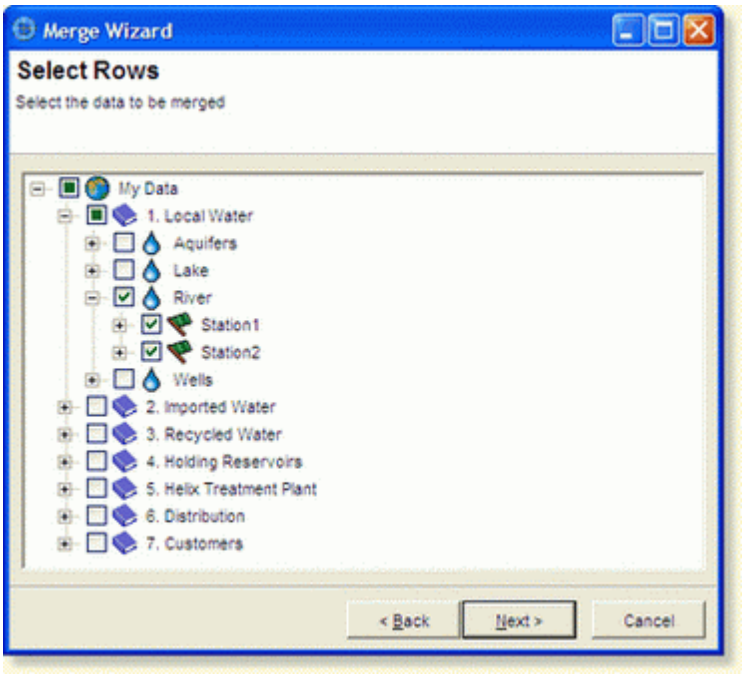
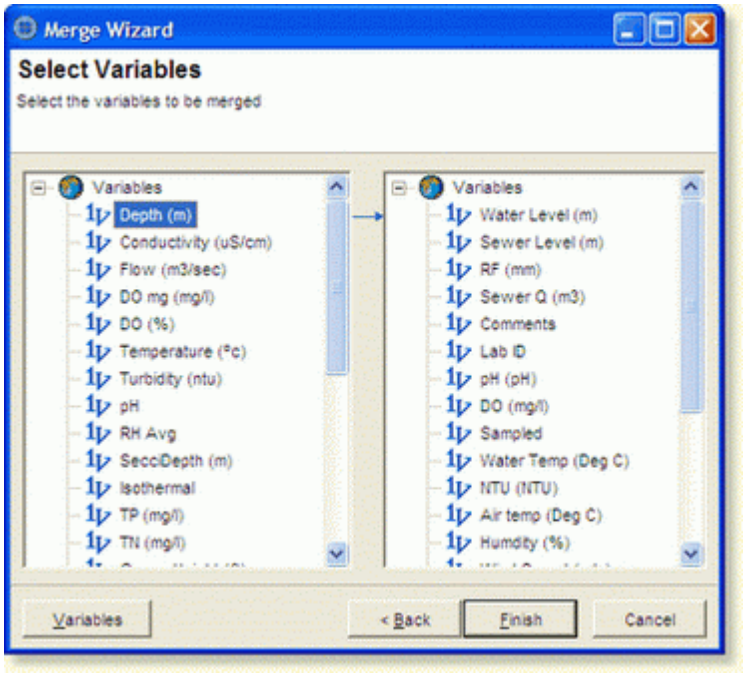


5. The Merge Wizard Select Variables dialogue box appears.



Select Variables

1. On the left are listed the available variables for merging, and on the right are listed your existing DataSight variables.
2. If there are variables in the left panel that do not match existing DataSight variables on the right you can add them by Clicking the Variables button which will open the Variables dialogue box.
3. Link the variables to be merged by clicking on a variable on the left and dragging it across to the same variable on the right. Drop it when ⊞appears on the cursor. Note that Date and Time (which are required database variables) will be automatically merged as part of the process and will not appear in either panel.
4. Click Finish.

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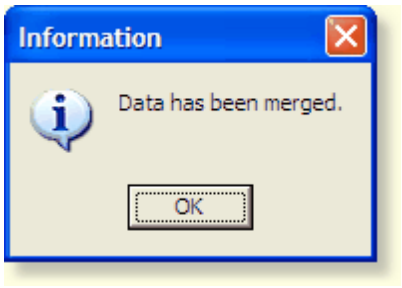


When you merge a database, the merge data will be *added* to the existing data, unless it has the same Level 1, Level 2, Level 3 and Level 4 *and* Time *and* Variable name. Then, it will *overwrite* the existing data.

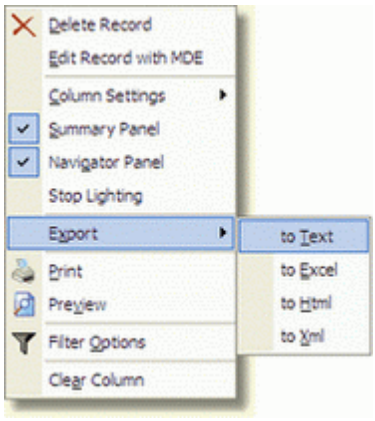
This feature is not available within DataSight Enterprise Edition. See DataSight Administrator (Enterprise).

10.4 Exporting data

10.4.1 Exporting data from a datasheet

You can export data from a DataSight Datasheet into Text, Excel or HTML formats.

1. In the Data List tab, click ⊞ on My Data expand your list of Level 1 . You can view data at the Level 2, Level 3 or Level 4 level.
2. Click to select the Level 2, Level 3 or Level 4 then click the DataSheet tab.
3. Right-click within the datasheet and select Export.



4. From the export list, select your format (txt, xls, html, xml) and the Save as dialogue box appears.
5. Navigate to a chosen folder, name your file and click Save.

10.4.2 Exporting a Desktop database

You are able to export data in DataSight Desktop database format, *and* as an MS Access database file (restricted to version 2000 and later). Before commencing the export process we recommend that you use the **Repair** and **Compact** functions to repair any errors and to compact the database.

1. Click File, Database, Export to start the Export Wizard.
2. The Export Wizard Select Data Location dialogue box appears. Use the upper panel to export a DataSight database and the lower panel to export an MS Access database.

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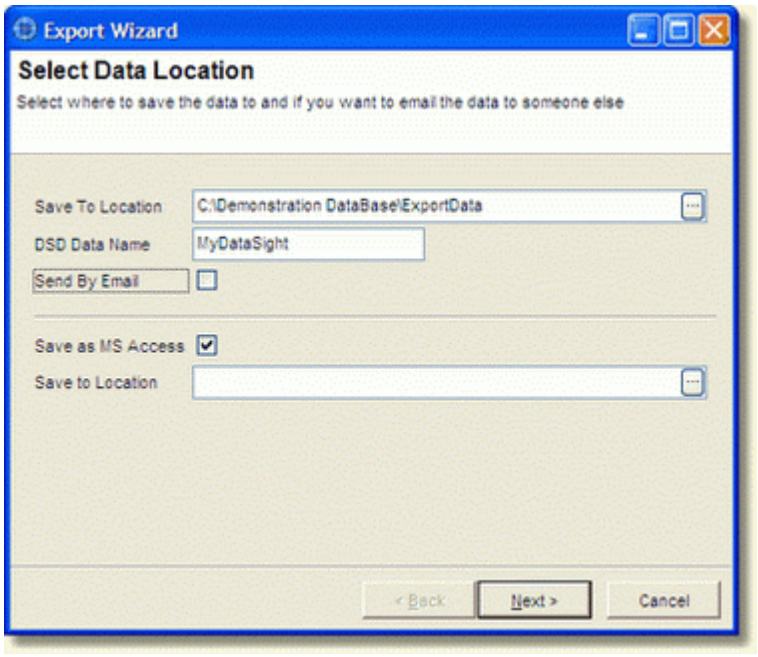
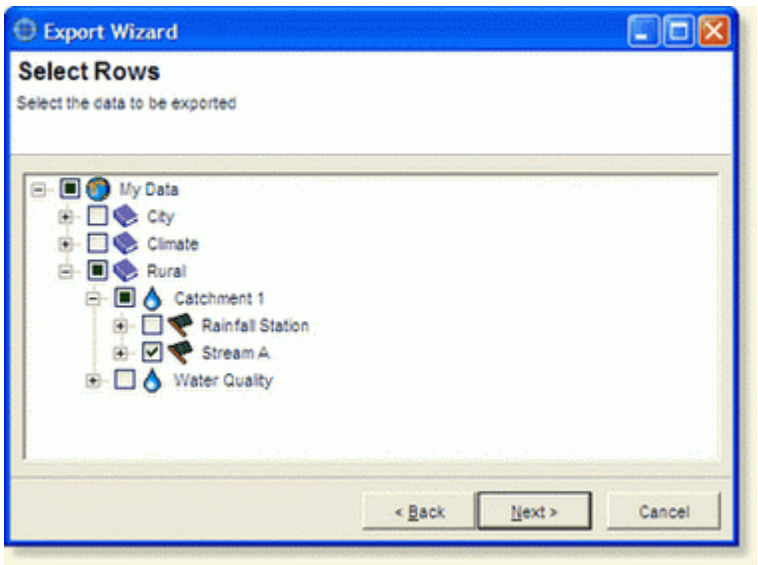


3. In the upper panel Save To Location field click and navigate to the folder in which you want to save the DataSight database. The name of the default folder where the database will be saved is *Export Data*. You cannot save more than one database to a folder. If you attempt to do this, you will be given the option of overwriting the existing database. You can change the name of the folder by highlighting and typing over a new name. If the folder does not already exist then one will be automatically created.
4. If you want to email the database, then name your data and check the Send Data by Email checkbox.
5. If you also want to export the database in MS Access format (version 2000 or later), then check the Save as MS Access checkbox in then lower panel. Then, in the lower panel Save To Location field click . The Save As dialogue box appears. Navigate to the folder in which you want to save the MS Access database. Click in the File Name field and name the file. Click Save.
6. Click Next. The Export Wizard Select Rows dialogue box appears.
7. Select the data you want to transfer by checking the appropriate checkboxes and click Next.



8. Select any or all variables (you *must* include Date and Time) and click Finish.

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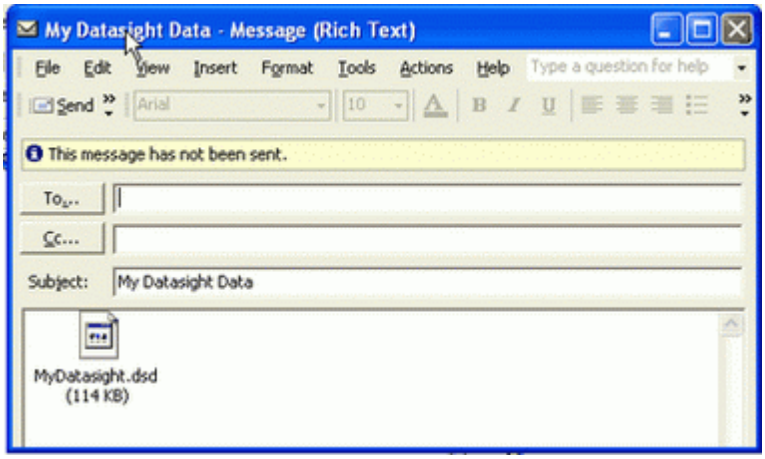
9. The Transfer Progress dialogue box appears.
10. If you had earlier checked the Send Data by Email checkbox, then an email window will open with a DataSight database as an attachment.



Enter the email address of the recipient in the To field and click Send.

10.5 Move To / Copy To

The **Move To** and **Copy To** functions, accessible within the Datasheet, allow the user to move or copy data across levels within a DataSight database.

Within the datasheet the user can select

- individual records
- multiple, individual records (using the Ctrl key and selecting individual records)
- a group of records (selecting the first record, then press Shift and select the final record)

The Move To and Copy To functions are then available by right-clicking on the selected data within the datasheet.

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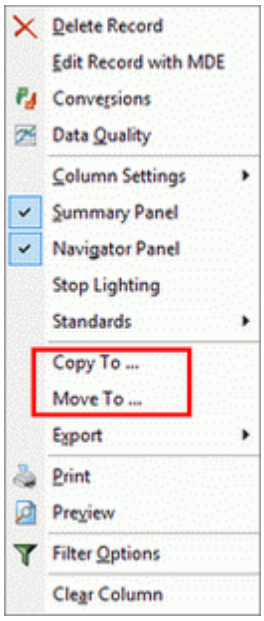
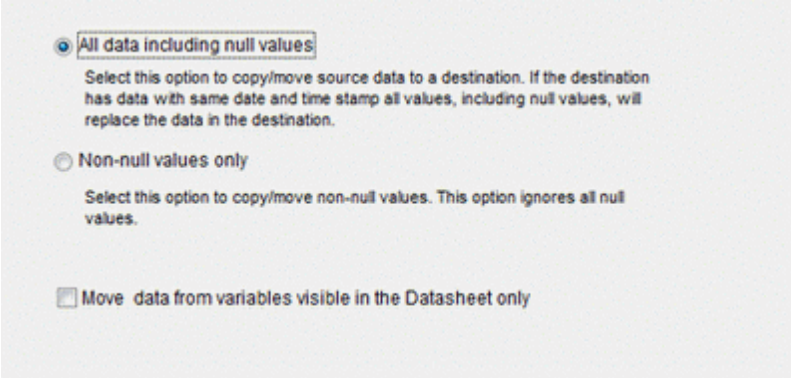


10.5.1 Move To

Selecting the **Move To** function will "cut and paste" the selected data from the current level in the database to a selected destination elsewhere in the database.


All data including null values
Select this option to copy/move source data to a destination. If the destination has data with same date and time stamp all values, including null values, will replace the data in the destination.
Non-null values only
Select this option to copy/move non-null values. This option ignores all null values.
Move data from variables visible in the Datasheet only

The first window displayed when Move To is selected provides the option to either move all values for the selected record **or** only non-null values, ignoring those variables which contain null data.

The checkbox at the bottom of the option window also allows the user to select to move only data that is currently being displayed in the datasheet.

When the user selects **Next** DataSight will request a destination location (Level 3) for the data that has been selected.

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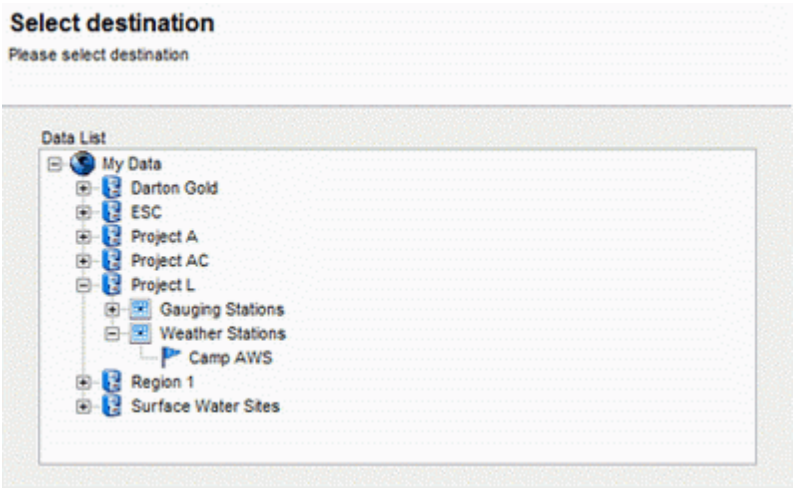
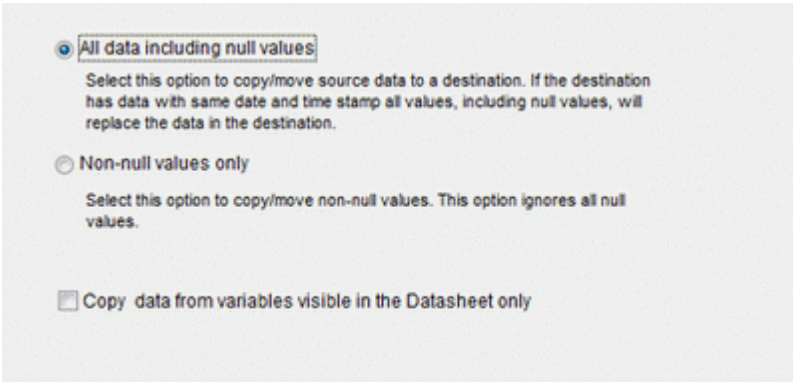


Select the destination location and click **Finish** to move the data.

10.5.2 Copy To

Selecting the **Copy To** function will copy the selected data from the current level in the database to a selected destination elsewhere in the database.


All data including null values
Select this option to copy/move source data to a destination. If the destination has data with same date and time stamp all values, including null values, will replace the data in the destination.
Non-null values only
Select this option to copy/move non-null values. This option ignores all null values.
Copy data from variables visible in the Datasheet only

The first window displayed when Copy To is selected provides the option to either move all values for the selected record **or** only non-null values, ignoring those variables which contain null data.

The checkbox at the bottom of the option window also allows the user to select to copy only data that is currently being displayed in the datasheet. This allows the user to only copy data from *selected variables* to another location in the database.

When the user selects **Next** DataSight will request a destination location (Level 3) for the data that has been selected.

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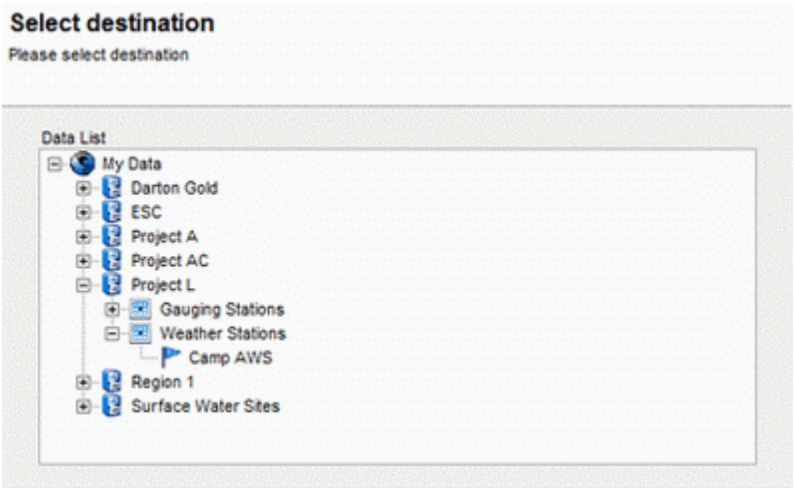

Select the destination location and click **Finish** to copy the data.

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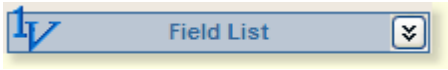
11 Viewing/Editing Data

You view data in tabular form in the Datasheet.

To view data in a Datasheet

1. Select the Data List tab. Click ⊞ next to My Data to expand your list of Level 2 . You can view data at the Level 3, or Level 4 level.
2. Click to select the Level 2, Level 3 or Level 4 then select the DataSheet tab if this is not already selected .
3. The default Column headings in the DataSheet correspond to the data variables already set up in the DataSight database. If the Field list panel is not already displayed, click the 

button on the DataSight toolbar.

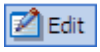
11.1 Editing data in the Datasheet

Data may be changed directly in the datasheet.

To edit data in the datasheet

1. Click

in the DataSight toolbar.
2. Click in the appropriate data field and make changes.
3. Click off the row to save the changes.

The datasheet remains in edit mode until the 

button is toggled off.

To delete data in the datasheet

1. Click anywhere in the data row .
2. Right click and select Delete Record.
3. You can delete multiple records by using CTRL in conjunction with clicking. To select a range, use SHIFT in conjunction with clicking.

With the development of DataSight Plug In Modules capable of complex data manipulation, it is prudent to add additional temporary calculation variables e.g. Calc 1, Calc 2, Calc 3. The preliminary results of calculations can be placed into these columns. When finished with these temporary results, you are able to use the Clear Column option to remove the data.

To clear a column of data

1. Click anywhere in your chosen column.
2. Right click and select Clear Column.

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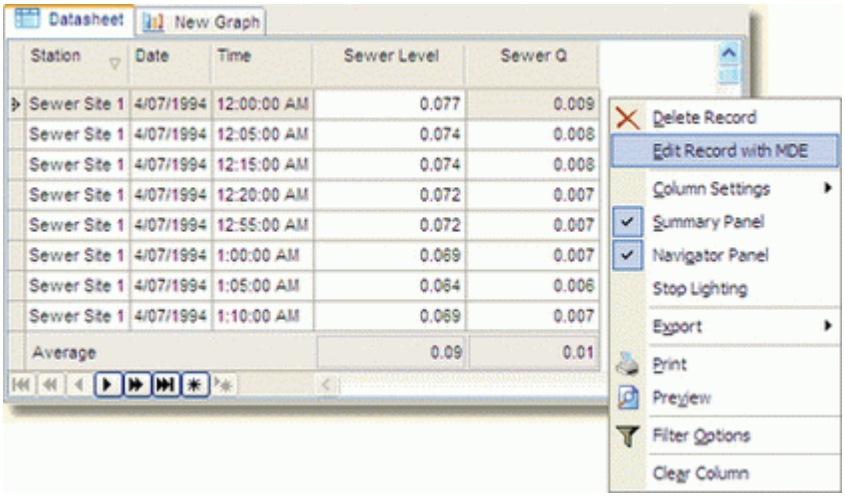
11.2 Manual Data Entry (MDE)

To edit data using the Manual Data Entry form

1. Highlight the selected Level 4 data point on the Datasheet. Right click on the Datasheet and select Edit Record with MDE.



2. The Manual Data Entry Form is opened and is populated with the variables that are displayed within the Datasheet.

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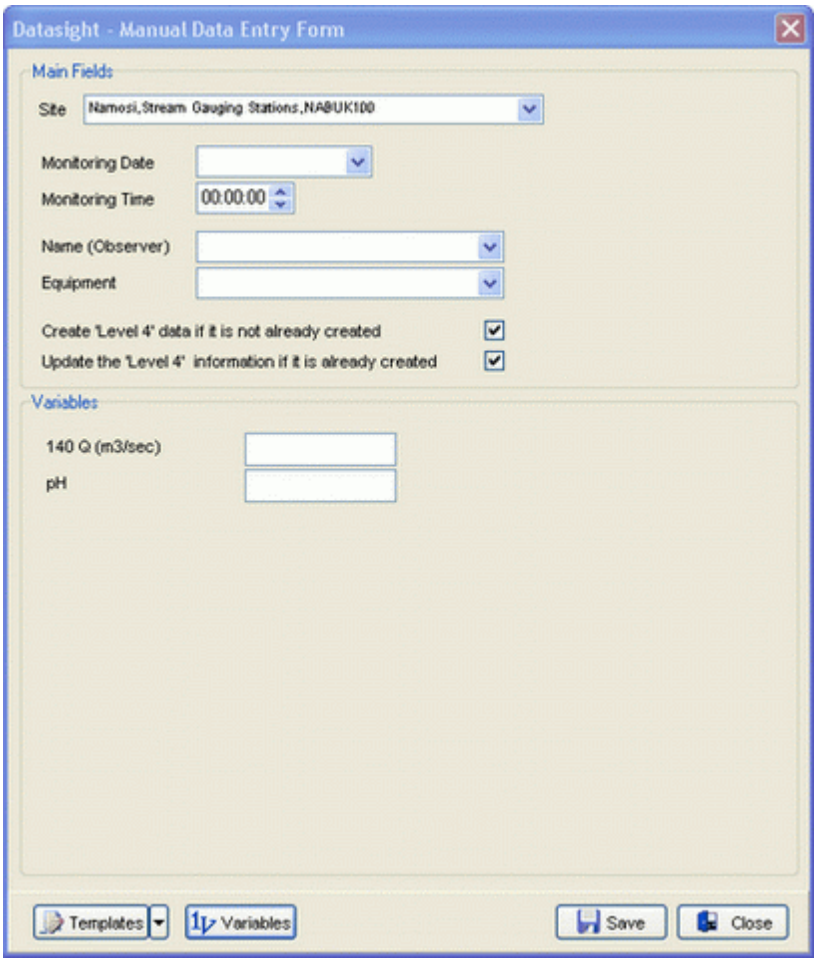
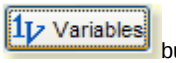
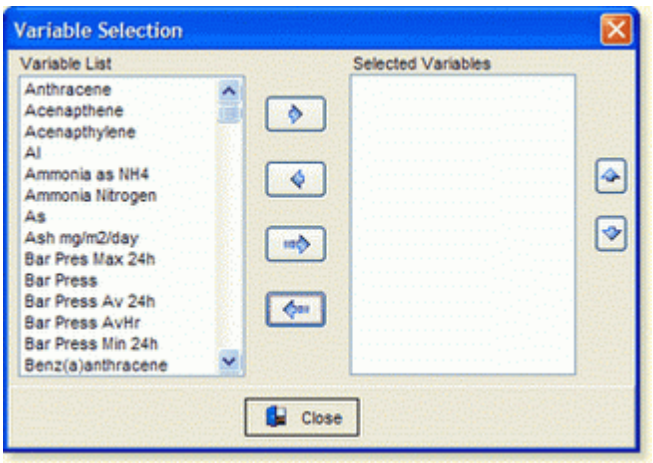


3. The user can change the Site and move the data to another monitoring site or just modify the variable values as required. Click Save.

4. The user also can create Manual Data Entry Templates. To select variables you want to show on the Entry Form click 'Variables'  button.

5. Left panel show all the variables available to show on the form. Right panel show already selected variables.



Add selected variables to the form.

Removes selected variable from the form.

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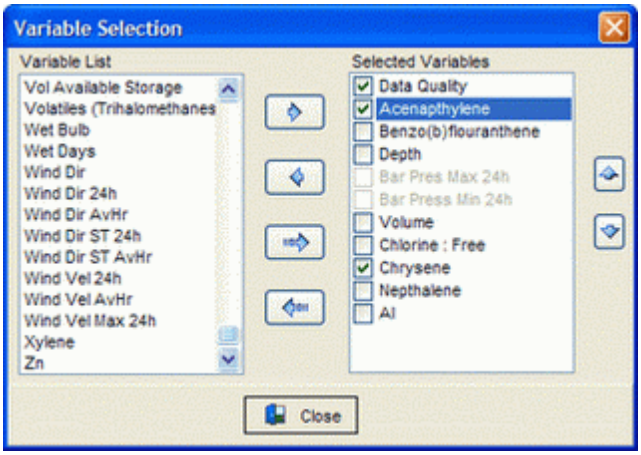
Add all the variables to the form

Removes all the selected variables

Changes order of the variable on the form.

6. After you selected variables and organized the order of the variables you can click button to finalize the selection.



As you can see on the image above some of the variables are faded and some of them have check boxes with them.

Numeric variables are shown faded in the list. Only text variables have check boxes. If the user clicks the variable, Datasight will populate all the previous unique entries for that variable to provide data entry consistency.

7. To save the entry form as a template. Click the Template button. Select 'Save'

8. Close the Manual Data Entry form to update the Datasheet.

11.3 Datasheet display options

Display width	With the cursor anywhere in the datasheet, right click and select Column Settings ▪ Check/uncheck Fit Columns to Width to toggle the automatic fitting of the Datasheet columns to the available width of the Datasheet panel. ▪ Check or uncheck the Best Fit to adjust the width of each column to accommodate the maximum width of the data in that column
Heading order	Left-click a Column header then drag and drop it to its new position.
Remove columns	Click on the Column header and drag and drop it from the datasheet panel. That variable in the field list will be unchecked.
Add columns	If any variable in the Field list is unchecked, it indicates that the field does not currently appear in the displayed Datasheet. You can then drag and drop any of these variables from the Field list to anywhere in the Datasheet (or check the box) to add that column to the Datasheet.

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Restore columns	To restore all variables in the Field list panel to the Datasheet, right click and select Column Settings then Restore Column Defaults.
Summary Panel	With the cursor anyw here in the datasheet, right click and toggle on or off Summary Panel to see the Summary Statistics.
Navigator Panel	With the cursor anyw here in the datasheet, right click and toggle on or off Navigator Panel. Scroll backw ards or forw ards through the data, jump to the start or end of the datasheet, or lock on to a row of data in the datasheet and navigate back to this point at any time.
Stop Lighting	With the cursor anyw here in the datasheet, right click and toggle on or off Stop Lighting.

When you save a Datasheet the column configurations are also saved.

The Datasheet Add/Remove column display should be changed at the Level 2 level and this setting w ill be applied dow n to the Level 3 and Level 4 level. Column heading order may be changed at any individual level.

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11.4 Summary statistics

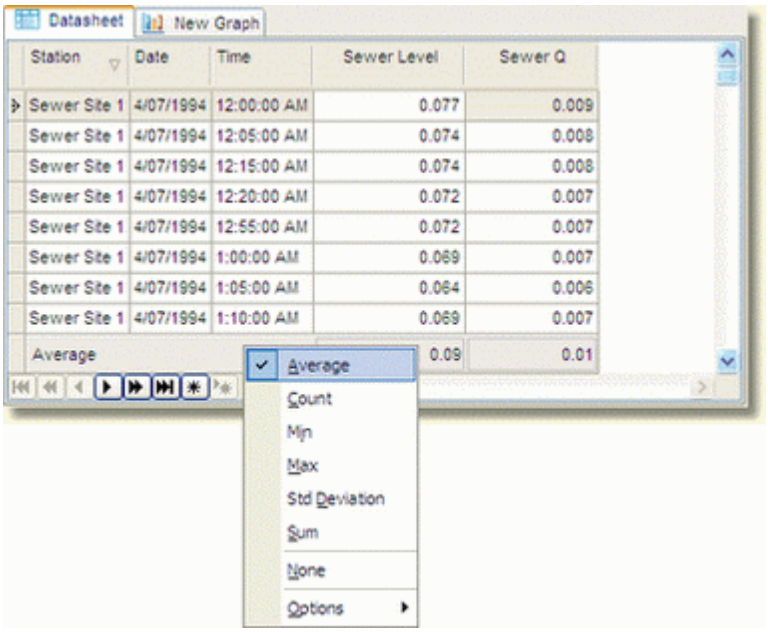
Use DataSight's QA/QC feature to calculate and display the following statistical characteristics of a datasheet:

Available statistics are:

- Average value
- Count
- Minimum value
- Maximum value
- Standard Deviation
- Sum

Display statistical values on a datasheet

1. Right click anyw here in the Datasheet and check the Summary Panel option.
2. Right click on the Summary Panel at the bottom of the Datasheet panel and choose a statistical property.
3. The values are displayed at the bottom of each relevant column of the Datasheet .



Note that Null values are ignored by default in the statistical summary but you can change this by selecting Options, then unselecting Ignore Nulls. Null values w ill then be treated as zero.

You also have the option of using only selected values for the statistical summary.

1. Use SHIFT+CLICK to select a range of values or CTRL+CLICK to select individual values on the datasheet.
2. Right click on the Summary Panel and select Options, Only Selected.

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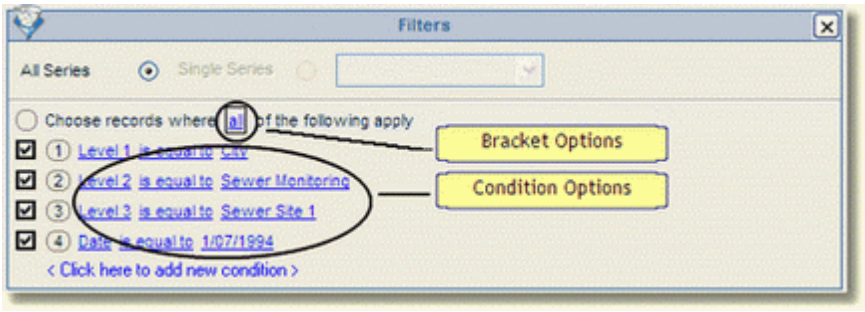
11.5 Filtering data

1. Click Filters on the DataSight toolbar (if it is not already active) to display the current filter conditions. If you had already selected a particular station using the Data tab for example you would see filters relevant to the Level 1, Level 2 and Level 3 that you had selected.
2. You can impose more Filters to isolate a subset of data that you are interested in.

Filters comprise two options: **Condition** options and **Bracket** Options.



Condition Options

Conditions have 3 parts.

1st part is the Field - selected from a list of possible options

2nd part is the Descriptor - a description of the relationship between the Field and the Value

3rd part is a Value

For example, in the statement *x is less than 3:*

x is the Field

is less than is the Descriptor

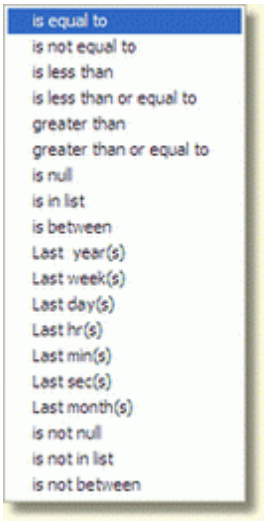
3 is the Value

To impose conditions:

1. Click in the line marked *<Click here to add new condition>.*
2. Click the 1st part and select a field.
3. Click the 2nd part and select a Descriptor.
4. Click the 3rd part and select or type a value.

Repeat this process to add more conditions.

List of possible conditions.



Conditional Filtering using Relative Date/Time values

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You have the option of filtering using Relative Date/Time values e.g. you could look at Temperature values for the last 3 months

Relative Time options are available by selecting

Date: to which you can then apply any of these Descriptors:

last (*n*) year(s)

last (*n*) month(s)

last (*n*) week(s)

last (*n*) day(s)

last calendar year

last calendar month

last calendar day

and/or

Time: to which you can then apply any of these Descriptors:

last (*n*) hour(s)

last (*n*) minute(s)

last(*n*) second(s)

Relative Time values are always relative to the current time, day, month and year on which you create or open a saved graph.

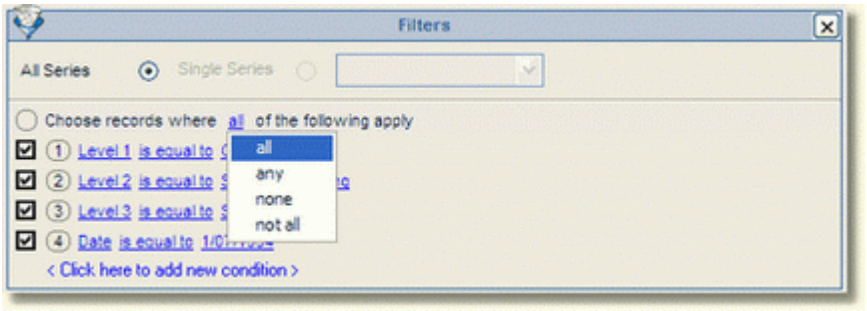
Bracket Options

Bracket options are relevant where you want to impose more than 1 condition

Option	Meaning
all	returns data where all the conditions are true.
any	returns data where any of the conditions are true.
none	returns data where none of the conditions are true.
not all	returns data when not all of the conditions are true.

To impose a bracket:

1. Click on the blue highlighted option on the bracket line and choose from the drop-down list.



2. The Datasheet/Graph will update automatically.

If you have selected the Graph tab you can choose to Filter data or all plotted data series by clicking either the Single Series or All Series radio button. If you click Single series, then select your series name from the Series drop menu.

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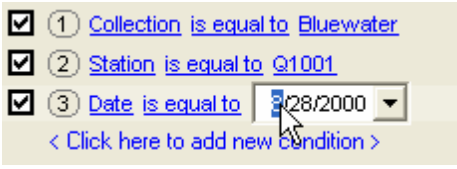
11.6 Setting dates

There are two ways to set dates:

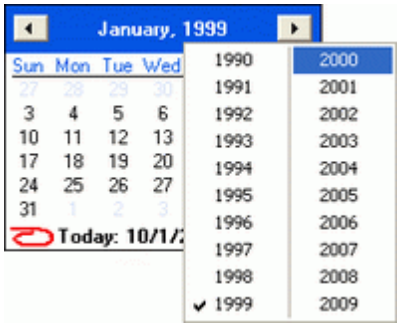
By Overtyping



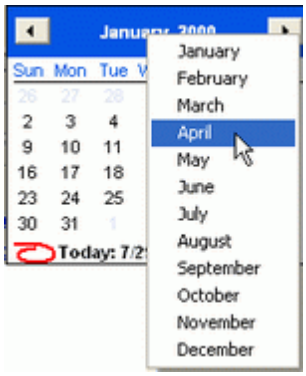
1. Click the day to highlight and overtype new day.
2. Click the month to highlight and overtype new month.
3. Click the year to highlight and overtype new year.

Or by using the Calendar Tool

1. Click on the down arrow to display the calendar with today's date highlighted.
2. Click on the year displayed in the blue panel header on the calendar then click to select a new year from the display.



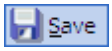
3. Then, click on the backward or forward arrows in the blue panel header to navigate back or forward through the months or,
4. Click on the month displayed in the blue panel and click to select the new month.



5. Click on the new day within the calendar page.
6. Click anywhere off the calendar page to set.

11.7 Saving a Datasheet

To save the current Datasheet

1. Click 

and the Save As dialogue box appears.
2. Name your datasheet and click Save. The Datasheet, together with its filters and column configuration will be saved.

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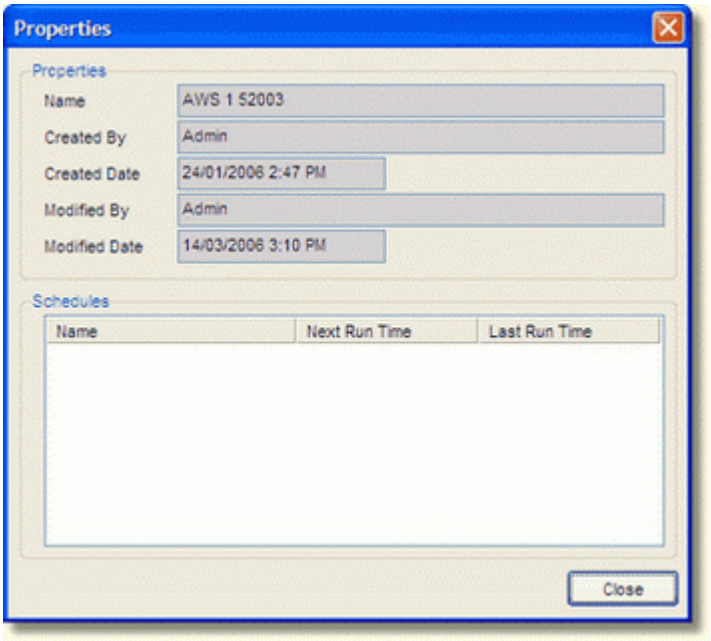
A Datasheet Properties file is created with any saved Datasheet and records the user who created the Datasheet and its creation date. If the saved Datasheet is subsequently modified, the Datasheet Properties will be updated to show the relevant user and date it was last modified. The Datasheet Properties will also show any tasks that are scheduled to run, using that datasheet.

To view the Datasheet Properties

1. Right click on the name of the saved datasheet and select Properties.



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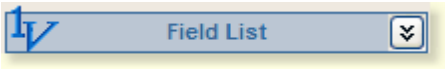
12 Graphs

12.1 Create/View Graphs

To create and view graphs of your data

1. With the Data List tab selected, click ⊞ on My Data to expand your list of Level 1. You can create graphs at the Level 2, Level 3 or Level 4 level.
2. Click to select the Level 2, Level 3 or Level 4 then select the New Graph Tab if this is not already active.
3. If you do not already see a blank graph template, click

.
4. Click 

on the DataSight Toolbar to toggle the Fields List view, if this is not already displayed. A list of the data fields (variables) will then be displayed in the Field List panel.
5. Click to select an independent variable and drag and drop it close to the outside of either the *x* or *y* axis. As it moves, the cursor will change to indicating a drop on the *x* axis or indicating a drop on the *y* axis.
6. Since you can only ever have *one* independent variable axis active at a time on the same graph, repeating the process with a different variable or to a different axis will overwrite your original independent variable selection.
7. As soon as your independent variable has been dropped, a grid displays dividing the graph into four area panels.
8. Click to select your first dependent variable (series) and drag it onto the graph. If your independent axis is *x* the cursor will change to or indicating that you are about to plot the dependent data series on left or right *y* axis. Alternatively, if your independent axis is *y* the cursor will change to or indicating that you are about to plot the dependent data series on the upper or lower *x* axis. You can continue to plot any number of dependent variables by dragging and dropping.
9. The default Graph Type is Line but you can change this by right-clicking on the open Graph and selecting Advanced Options to display the Advanced Options panel. You can also control a whole range of Graph formatting options by right-clicking on the Graph and selecting Properties.

If dependent variables differ markedly in their scale you should use two different dependent variable axes to cater for this (either the 2 *x* axes (Top and Bottom) or the 2 *y* axes (Left and Right).

If you are plotting Date as a series value, you will need to format it by right-clicking on the Graph and selecting Properties. Then, select the Series tab and use the drop-down menu to select the Date series. Select the General tab. Select the appropriate axis and check the Date Time checkbox.

12.2 Zooming

To Zoom

1. Click on the Graph toolbar.
2. Hold down left mouse button and drag mouse towards down/right. You will see a rectangle around the selected zoom area.
3. Release the left mouse button.
4. Repeat the action to continue zooming.

To restore view

Hold down left mouse button and drag the rectangle in the opposite direction (up/left). This will restore the original graph view.

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Change the appearance of your graph using other graph toolbar buttons.

12.3 Renaming and deleting Graph Series

To rename a series

1. Right-click on any series on the legend and select Rename.
2. Overtype the new name and click Ok.

To delete a series

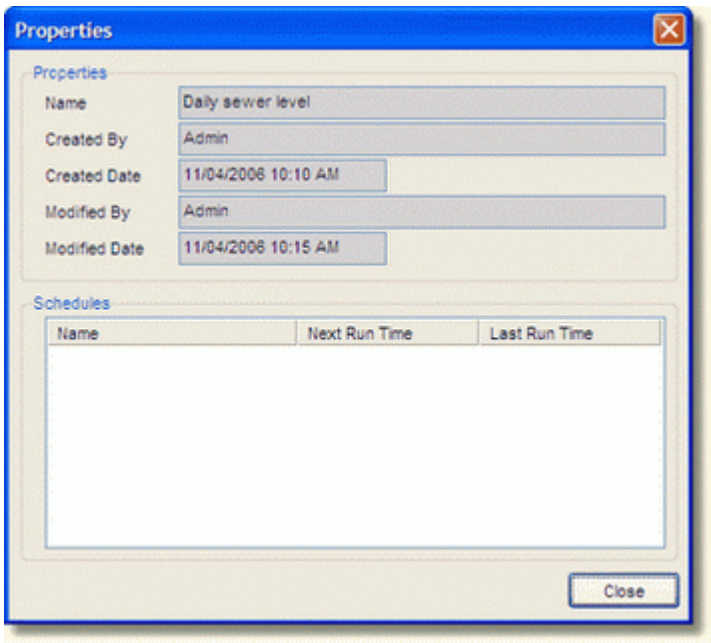
1. Right-click on any series on the legend and select Delete.
2. A Confirm dialogue box appears. Click Yes.

12.4 Saving a Graph

Saving a graph

Once you have created your graph you can save its structure and format to use again.

1. Click Save and the Save As dialogue box appears.
2. Name your graph and click Save.
3. A Saved Graph Properties file is created with any saved graph, recording the creator and the creation date. If the saved graph is subsequently modified, the Saved Graph Properties will be updated to show the relevant user and date it was last modified. The Graph Properties will also show any tasks that are scheduled to run, using that graph.
4. To view the Saved Graph Properties, right click on the name of the saved graph and select Properties.



Deleting a graph

1. Right-click on the saved graph.
2. Select Delete.

If you attempt to delete a graph with a task assigned you will get a warning and a request for confirmation. Deleting the graph will delete the task assigned to it.

To use a saved Graph

1. With the Data List tab selected, click ⊞ on My Data to expand your list of Level 2. You can create graphs at

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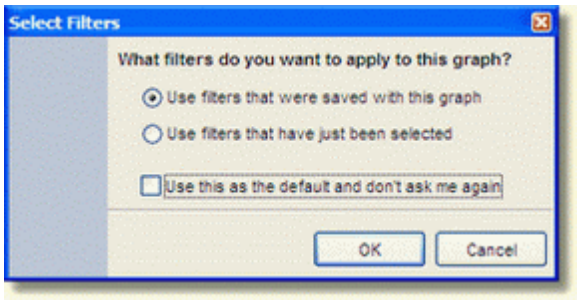
the Level 2, Level 3 or Level 4 level.

2. Double click to select a saved graph in Saved Views and the Select Filters dialogue box will appear.


Select Filters
What filters do you want to apply to this graph?
Use filters that were saved with this graph
Use filters that have just been selected
Use this as the default and don't ask me again
OK
Cancel

4. If you select *Use filters that were saved with this graph* option, the graph will open with the filters that were saved with the original saved graph.
5. If you have already pre-selected a Level 2 and/or Level 3 and or Level 4 and/or added other conditions then you can select the *Use filters that have just been selected* option.
6. Click Ok.

12.5 Copying Graphs

You can copy a graph and paste it as a Windows MetaFile to another application.

1. With your cursor anywhere on the Graph, right-click and select Copy to Clipboard.
2. Navigate to your open application right-click and select Paste.

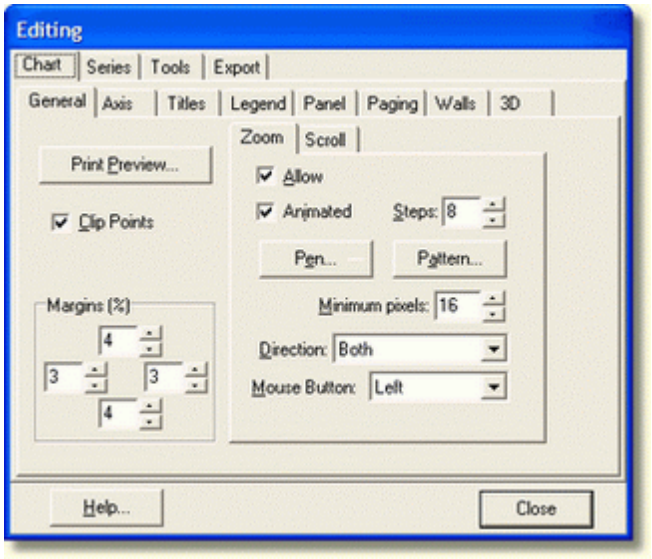
You can also save your graph as a .jpg.

1. With your cursor anywhere on the Graph, right-click and select Save As JPG.
2. The Save As dialogue window opens. In the Save In drop-down menu, select the folder that you wish to save to. Type in a File name and click Save.

12.6 Setting and Changing Graph Properties

DataSight comes with its own Graph Properties editor so that you can control the look of any graph display.

1. Click on the Graph toolbar or right-click anywhere on the Graph.
2. The Properties dialogue box appears.



3. Select the appropriate tab and make the changes.

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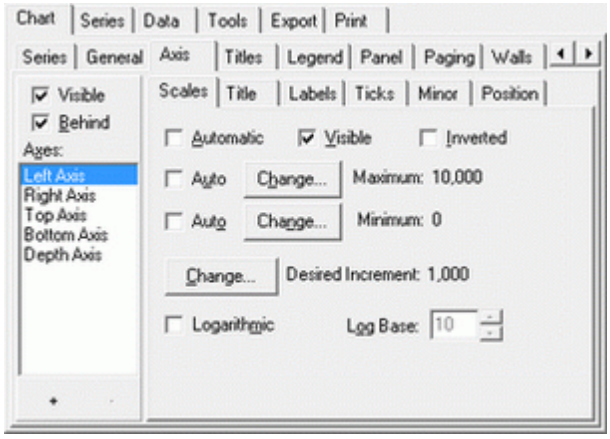
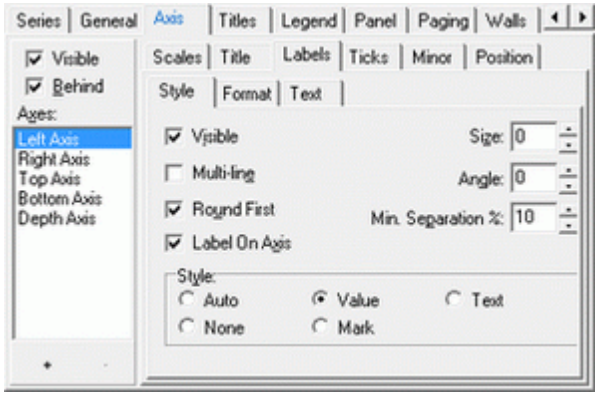
From within this window the user can access the options to change the graph style, edit the each of the axis, create graph titles, alter the legend and perform many other functions. It is simply a matter of selecting the appropriate tab.

For example, to change the format of date labels on the x-axis:

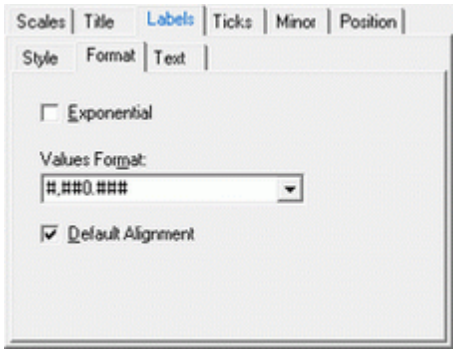
1. Select the **Axis** tab.



2. Select the **Labels** tab.



3. Select the **Format** tab.



4. Select Bottom Axis from the *Axes* list on the left, and select (or type in) the required format.

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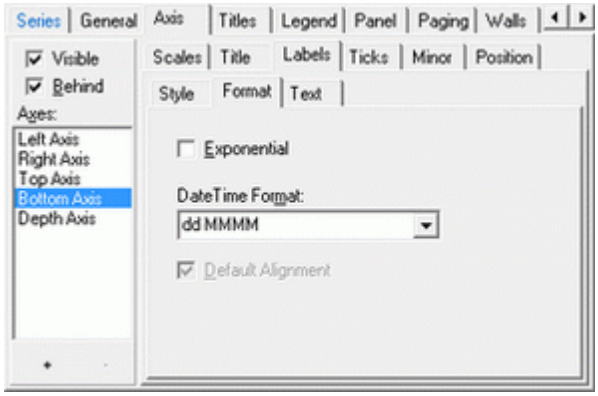
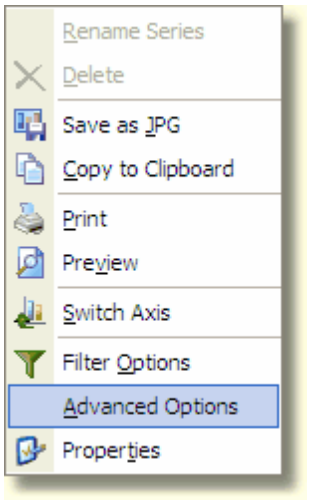


12.7 Using Advanced Options

Within the Graph panel you can use Advanced Options to apply commonly-used series Display Type and Series Label formats.

Graph Type and Series labels

1. With the cursor anyw here on the graph, right-click and select Advanced Options.



2. The Advanced Options panel w ill open to the right of the Graph.

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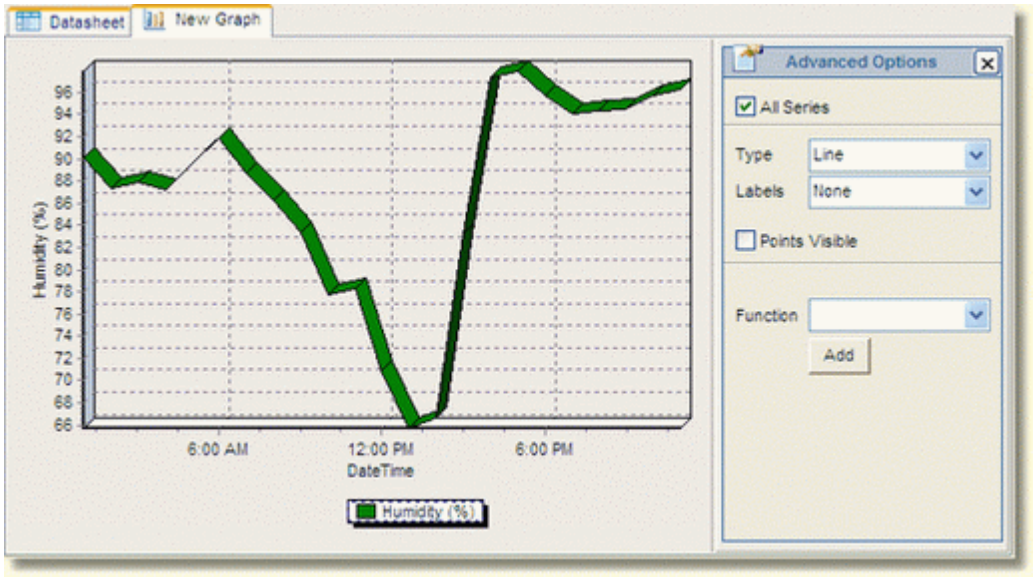
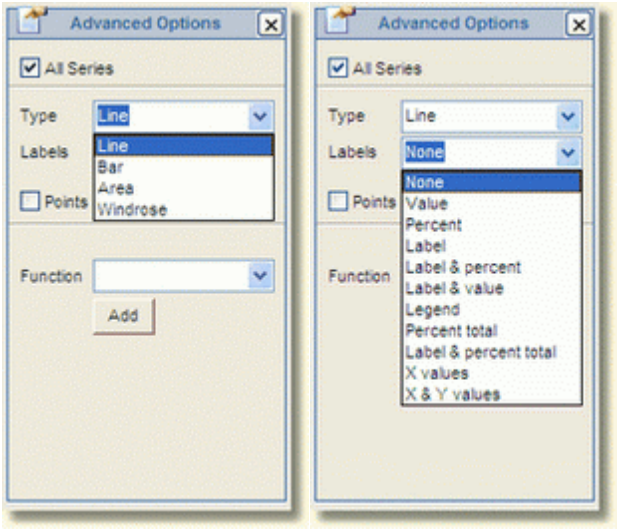


3. Checking All Series checkbox will apply the selected options to all plotted series. To apply an option to an individual series, uncheck the All Series checkbox and click to select any series on the graph legend.

4. Make your selection by using the drop-down menus on the Type and Labels fields.



5. Manipulate data for any graph series by highlighting the series in the legend of the graph and then selecting a function from the drop down menu. An entire new series is drawn onto the graph. Functions available are Min, Max, Average, Standard Deviation, Trend Line, Total and Cumulative

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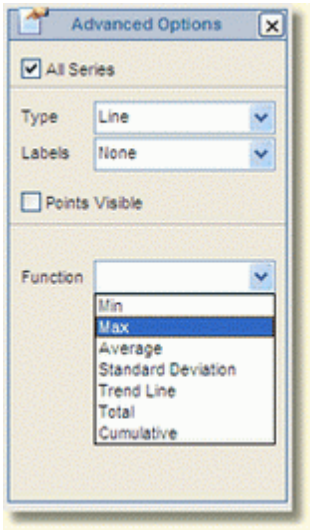


12.8 Advanced Graphs

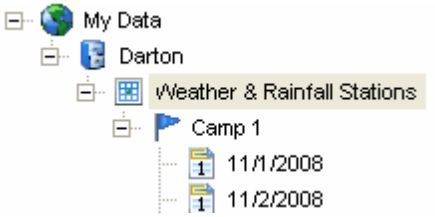
The following pages contain some examples of creating more advanced graphs using the features detailed in the previous section.

12.8.1 Graphing Multiple Variables

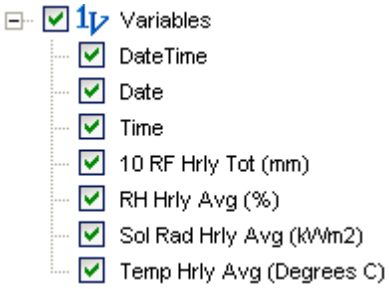
Graphing multiple variables allows users to display large amounts of information within one image.

The following example, using weather station variables, details the procedure for creating this type of chart.

This worked example uses a database with the following Data List Levels



and these Field List Variables



1. While viewing the New Graph window within DataSight you can drag and drop variables in the Graphing window.

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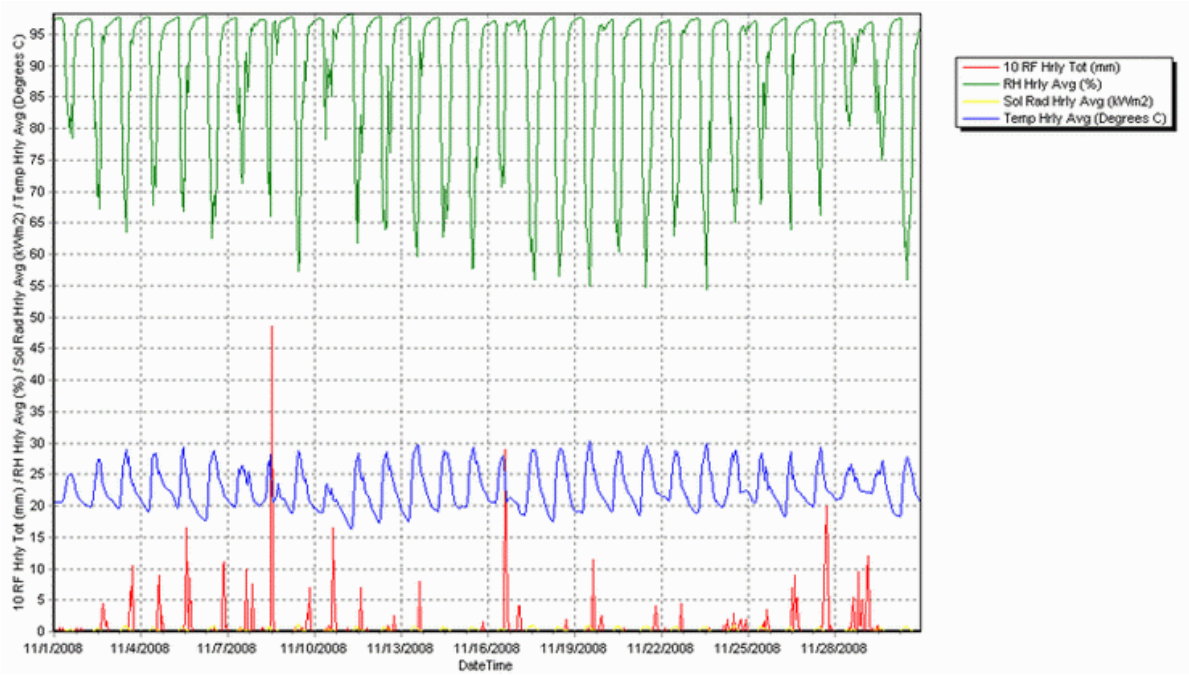
2. Click and hold the DateTime variable and drag it across to the graph, dropping it on the *x*-axis when the cursor looks like this
3. Now you can add dependent variables on the *y*-axis, dragging them from the Variables list and dropping when the cursor looks like this

For this example four variables are added to the left-hand axis: Rainfall, Relative Humidity, Solar Radiation and Temperature.



By default these variables are all added as line graphs, and the chart may look crowded.

So, the aim now is to clearly display these variables clearly and distinctly within the one chart.

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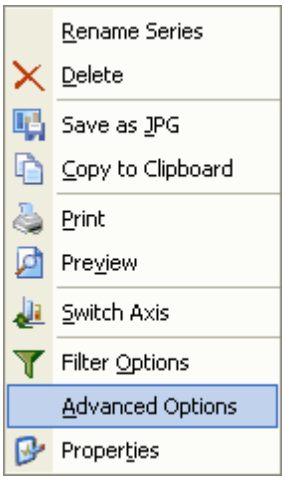
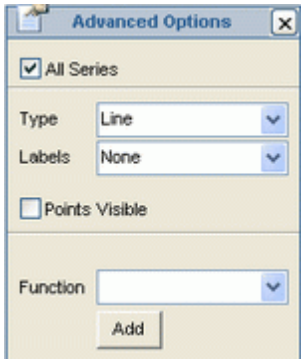
Right-click anywhere within the graphing window and select **Advanced Options**.



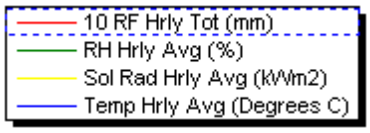
This will display the Advanced Options to the right of the graphing window.

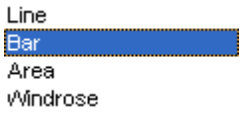


Advanced Options allows you to edit the **Type** of graph for each variable, the type of **Labels** visible, turn data **Points** on/off, and add **Functions**, such as trend-lines and cumulative data.

For this example, we will display Rainfall as a Bar graph, Solar Radiation as an Area graph, and Relative Humidity and Temperature as Line graphs.

- With the Advanced Options window open, ensure the **All Series** box is unchecked, left click on the variable you wish to edit in the graphing window. This will select it and display a dotted line around the label.





- Left-click on the drop down menu next to **Type** and select Bar.

- This will display the data for the variable selected (*'10 RF Hrly Tot'*) in Bar chart format.

- Left-click another variable within the graphing window and alter it to be displayed as an Area graph. For this example, *'Sol Rad Hrly Avg'*.

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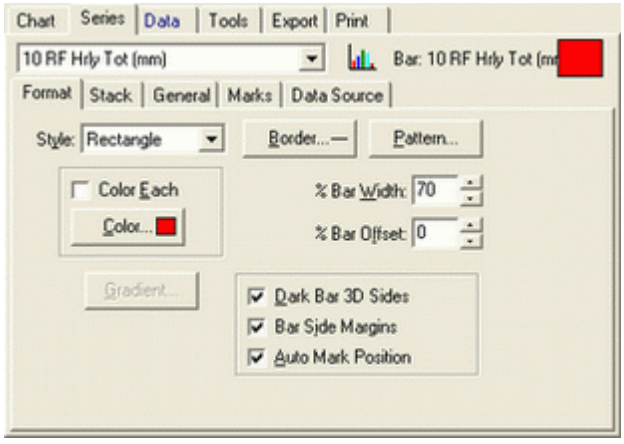
- Close the Advanced Options toolbar

Click the Graph Properties button on the toolbar. Alternatively, right-click anywhere within the graphing window and select **Properties**. This will open the Graph Editing window:

The first thing you can alter within this window is the graph colours so they are all easily visible when they are displayed within the one chart.

- Select the **Series** tab.



- Select the variable to be displayed as a Bar chart (eg. *'10 RF Hrly Tot'*).
- under the Format tab you can alter the Style, Colour, Bar Width, etc.
- Click the **Border** button and untick the **Visible** checkbox, click **OK**.

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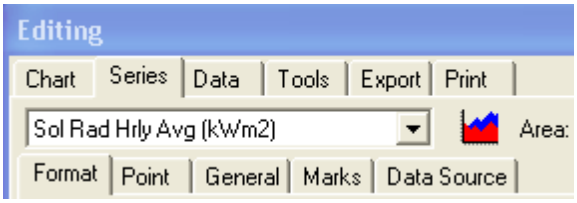
- From the drop-down arrow under Series select the variable to be displayed as an Area graph (*'Sol Rad Hrly Avg'*).



- under the Format tab click the **Border** button and untick the **Visible** checkbox, click **OK**.

- Click the **Area Lines** button and untick the **Visible** checkbox, click **OK**

- Following these steps has simply removed the borders from around these two variables.

- Another option is to click the **Color** button and you can change the colour the variable will be displayed in.

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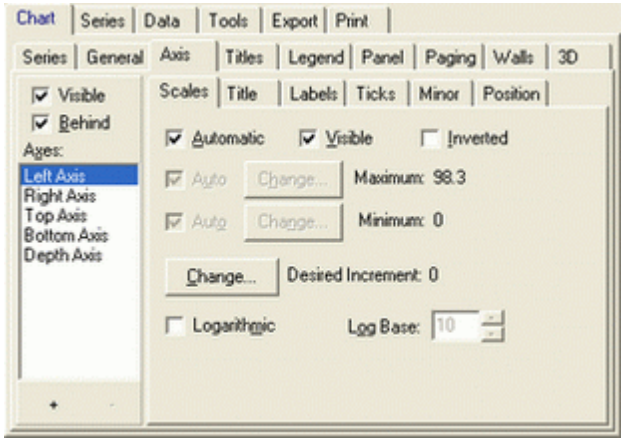
In order to distribute the variables along the *y*-axis you must create several custom axes to display them on.

- In the Graph Properties window, select the **Chart** tab.

- now, select the **Axis** tab. This diaplsy all the options available to you for editing the chart axes.



To add a Custom axis, click the + button below the axes list. To display four variables on the *y*-axis, as is re quired here, click this button three times.

You now have a Left Axis and Custom 0, Custom 1 and Custom 2 to display these variables.

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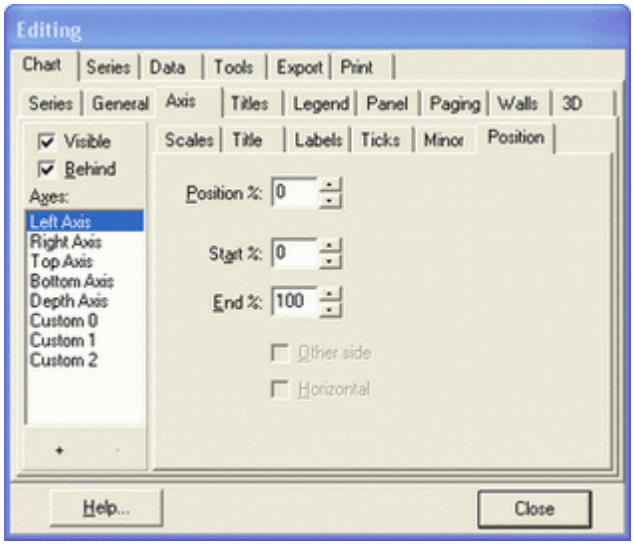
To distribute these axes evenly up the left-hand *y*-axis:

- Within the Editing window, Select Left Axis within the Axis tab and click on the **Position** tab.

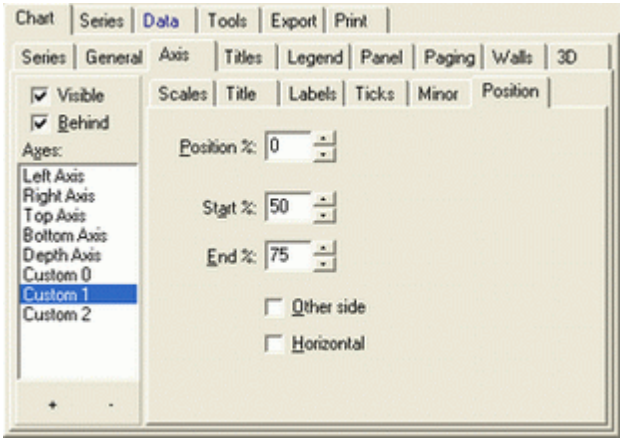


- leave the **Start %** on **0**, change the **End %** to **25**.

- select the Custom 0 axis from the list to the left. Change the **Start %** Position to **25** and the **End %** **50**.

- Custom 1: **Start % 50, End % 75**.

- Custom 2: **Start % 75, End % 100**.



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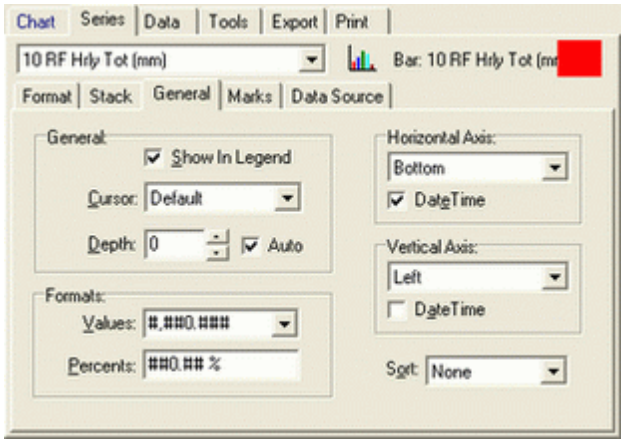
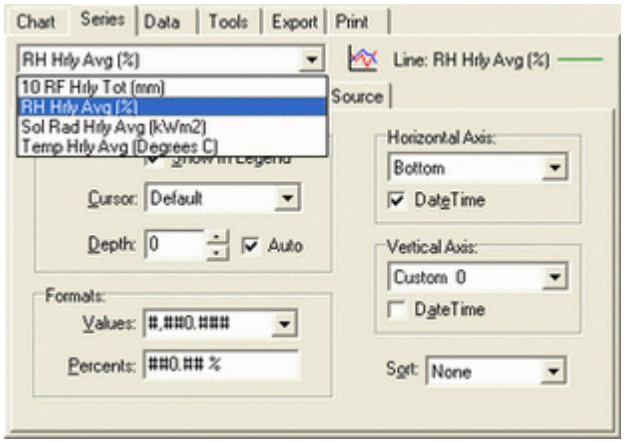
Now, we must distribute the variables across the axes we have created.

- Select the top **Series** tab (between the **Chart** and **Data** tabs) and select the **General** tab below this.



- Assign a vertical axis to each of the variables:
- Select each variable from the drop-down menu and alter the **Vertical Axis** it is displayed on.



- Each variable should have a different Vertical Axis.
- When you have finished assigning axis to the variables, click **Close**.

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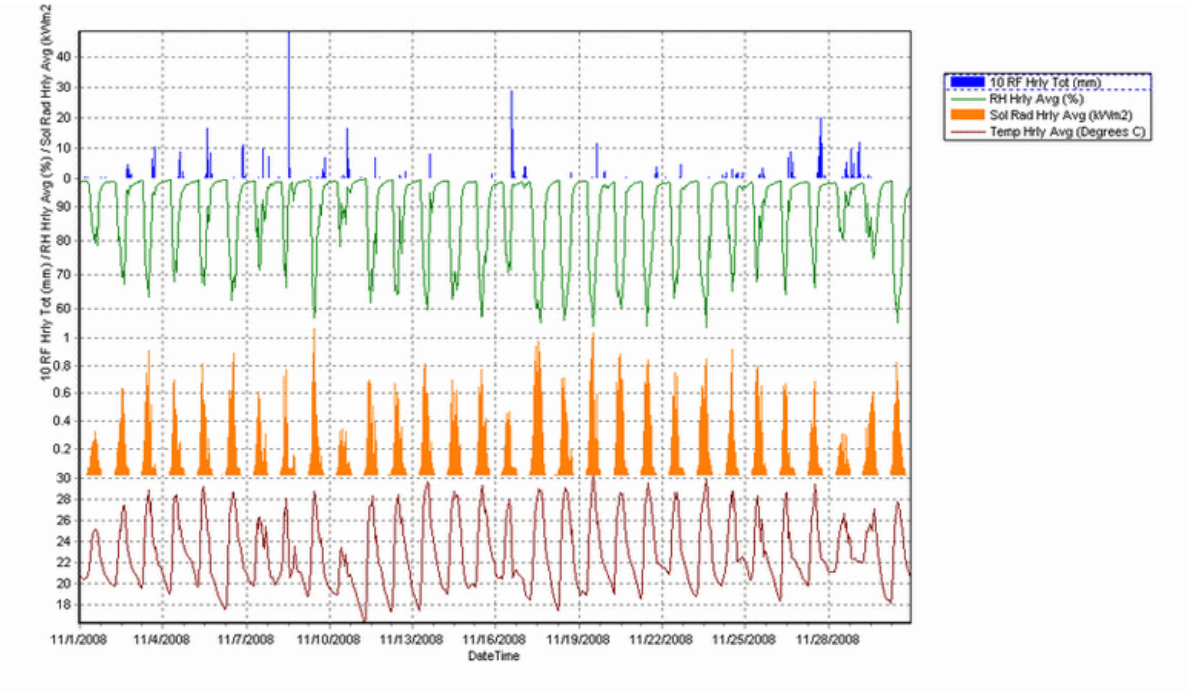

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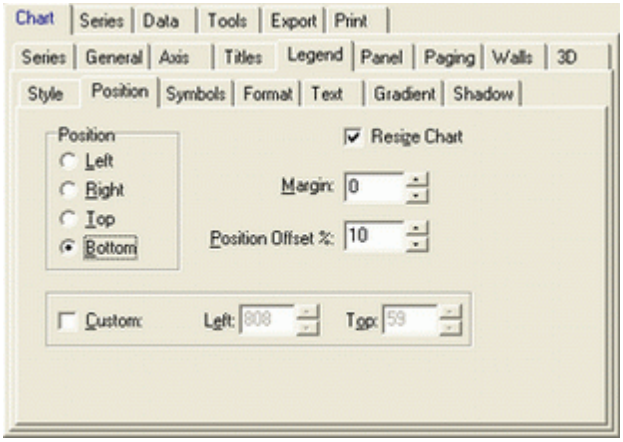
Final presentation of the graph requires editing other attributes such as Legend, Title, Axis labels and inserting separation lines to clearly identify variables.

Legend

- Open the **Graph Properties** window

- Select the **Chart** tab - select the **Legend** tab - select the **Position** tab.

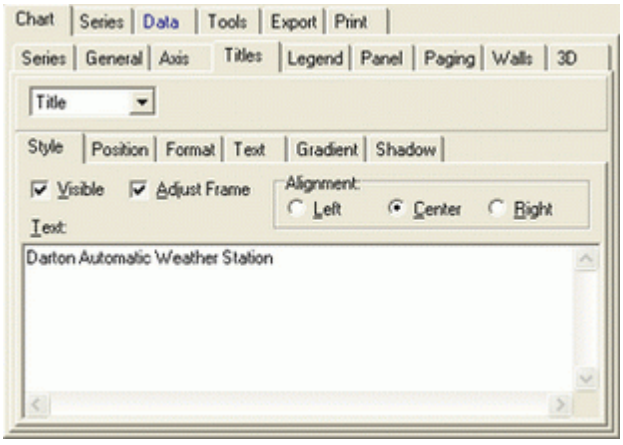
- Change the position of the Legend to **Bottom**.



- From here, you can also edit other Legend properties such as the Text style and Framing and Shadow effects.

Title

- Select the **Titles** tab and enter a Title / SubTitle / Footer.



Axis

- Select the **Axis** tab, select the **Title** tab and untick the **Visible** checkbox.

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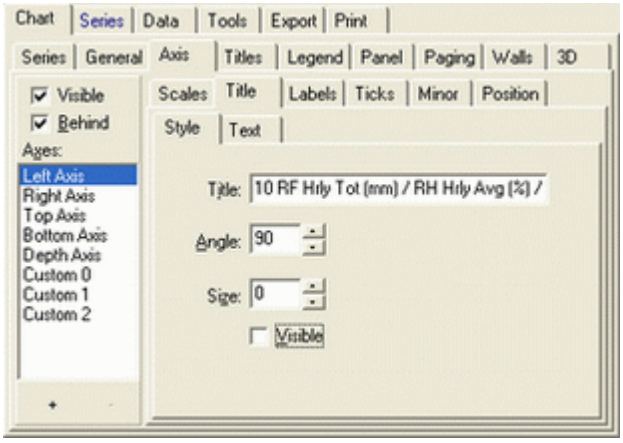
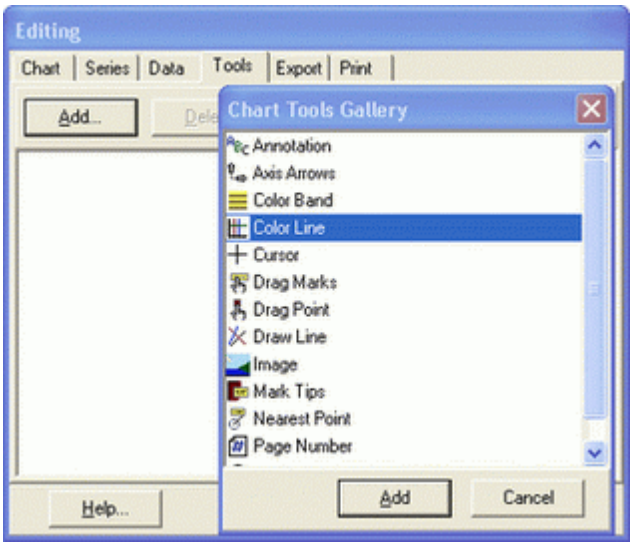


Separation Lines / Using Tools

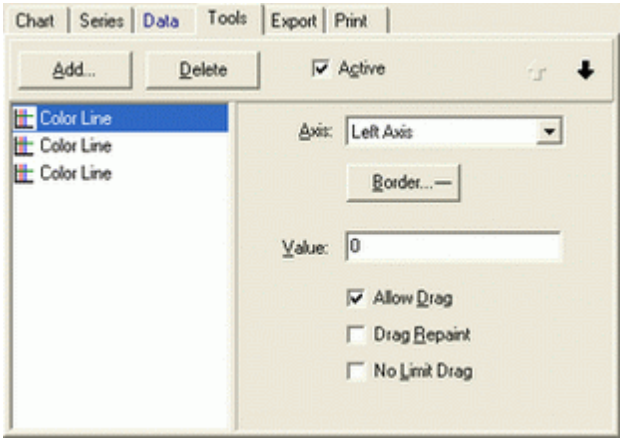
- Select the **Tools** tab from the top of the **Graph Properties** editing window and click the Add button.

- Select Color Line, and click **Add**.



- Add 3 colour lines.

- You can now assign these lines to Axis, and check the **Allow Drag** box to set their position on the axis.



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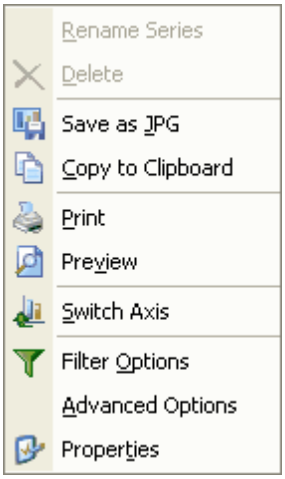
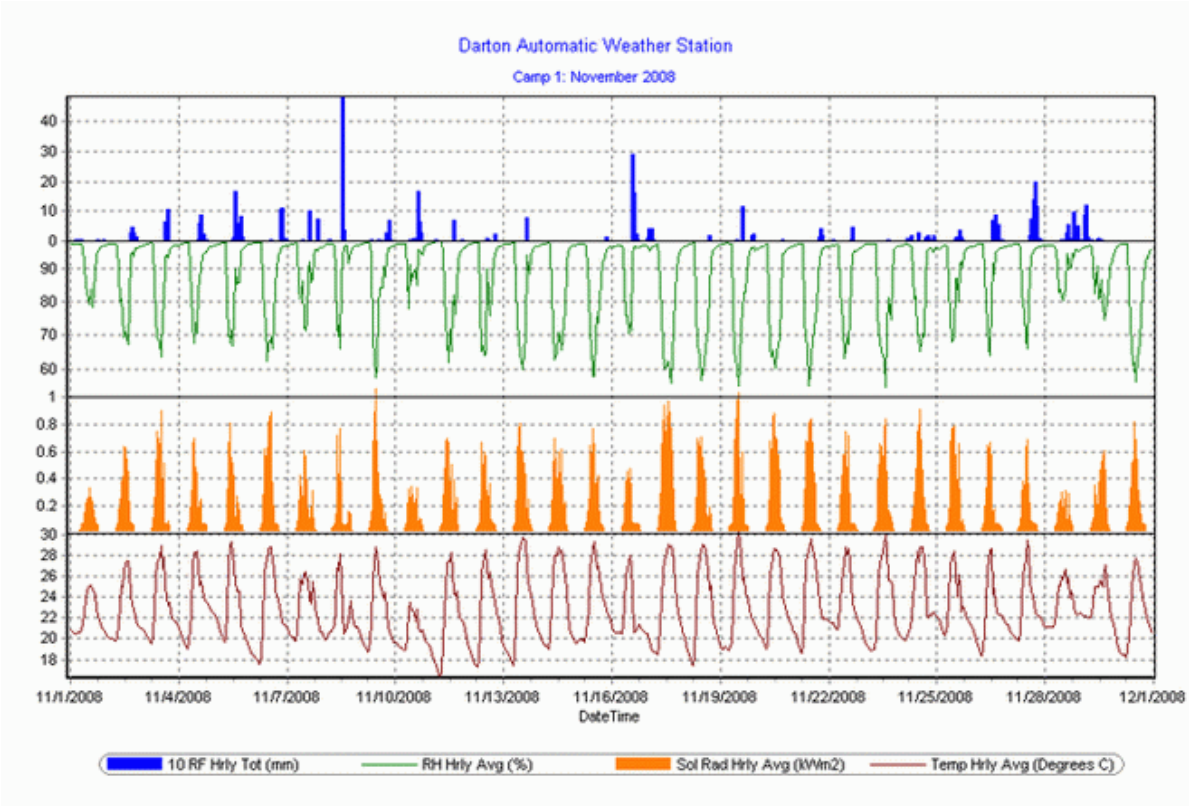
- Click **Close**.

You have now created a high quality, presentable chart using several variables from your dataset. You can now print the graph, or it can be copied to the clipboard or saved as a JPG file and placed into a report or other document. To do this **right-click** anywhere on the graph and select from the list of options.





12.8.2 Wind Rose

Creating a wind rose from weather station data is a great way to get a succinct view of how wind speed and direction are typically distributed at a particular location.

When graphing a wind rose in DataSight the wind rose is presented in a circular format. It shows the

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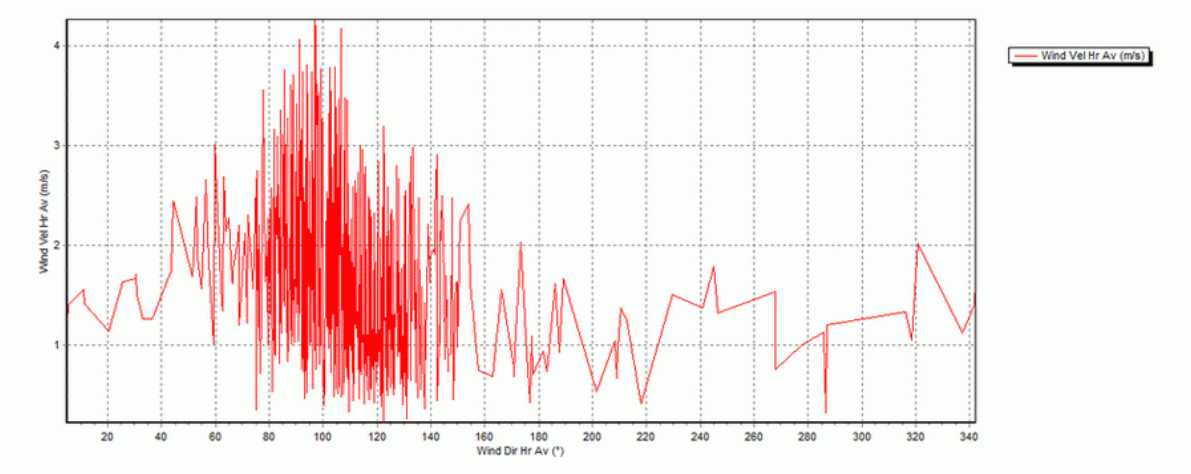
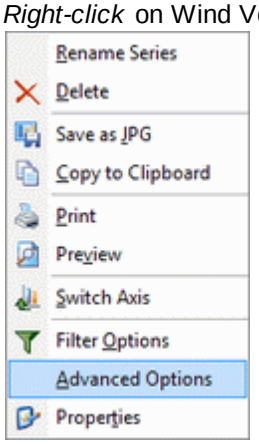
velocity of winds blowing from particular directions. The distribution of each point or line around the circle is related to the velocity that the wind blows from a particular direction.

It is also possible to create a Wind Direction Report in DataSight. This report displays a wind rose showing the **frequency** of winds blowing from particular directions. The length of each "spoke" around the circle is related to the frequency of time that the wind blows from a particular direction. See **Reports** for further details.

1. Within the DataSight graphing area, drag and drop the Wind Direction variable on to the *x*-axis (horizontal axis).
2. Drag Wind Velocity on to the *y*-axis (vertical axis).
   DataSight will plot this data as a line graph as default.



3. *Right-click* on Wind Velocity in the the legend and select **Advanced Options**.



4. Within the **Advanced Options** area that opens select *Windrose* from the **Type** drop-down box.

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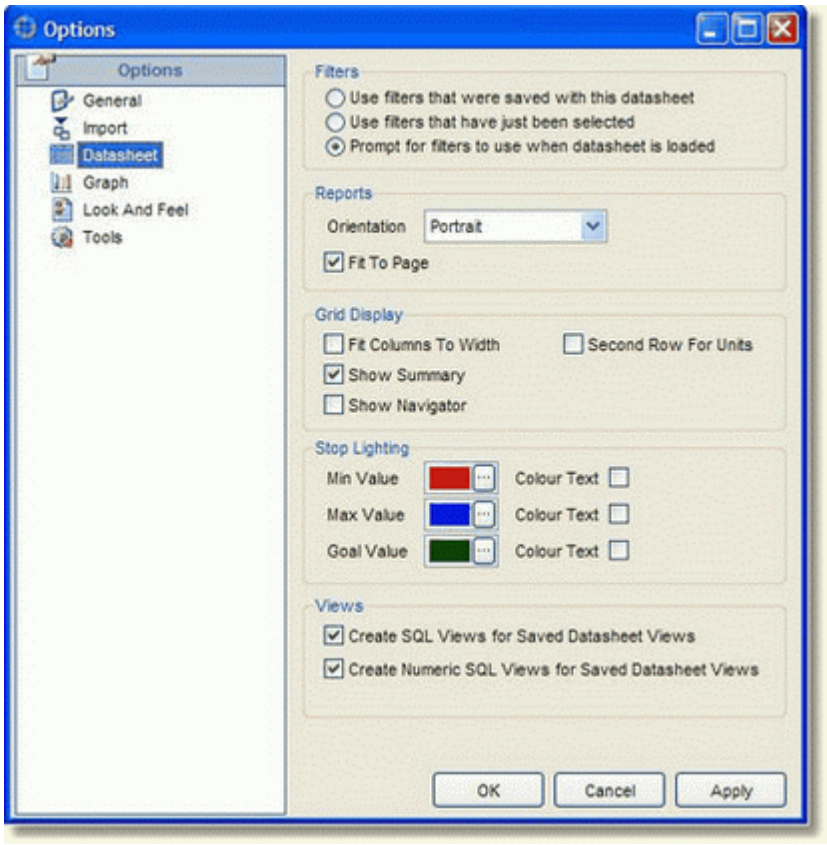
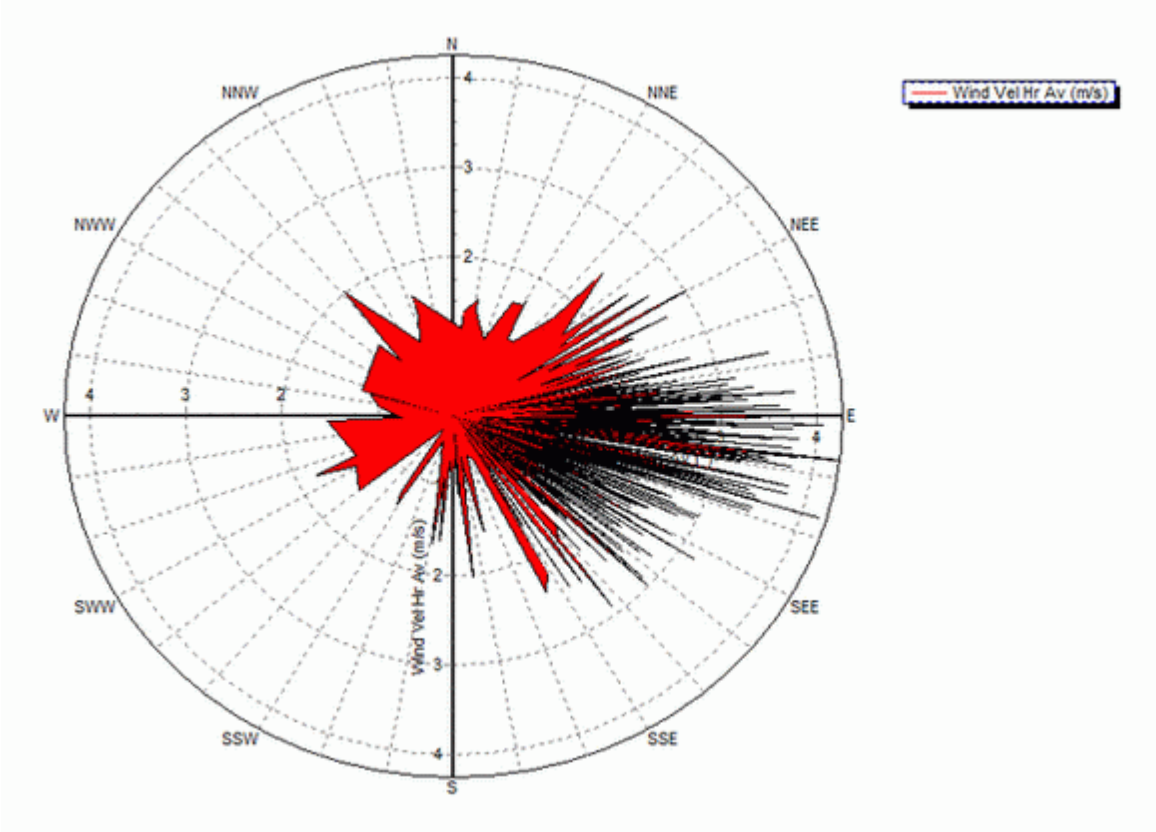


The graph will change to a wind rose.



5. Opening Graph **Properties** (*right-click* on the graph) allows the user to make the graph circled:

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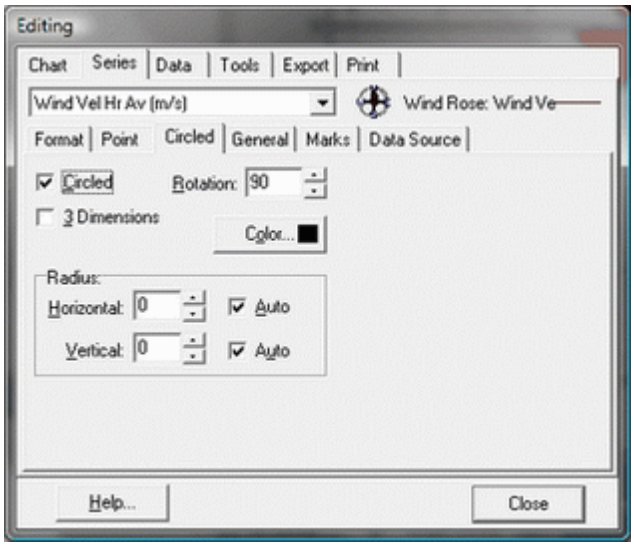
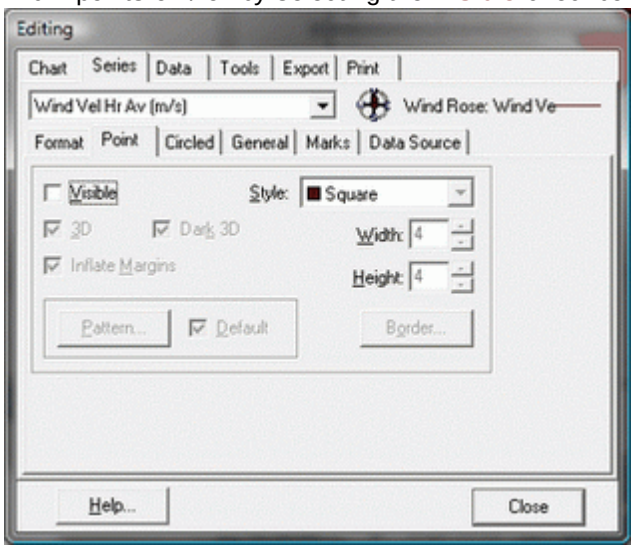
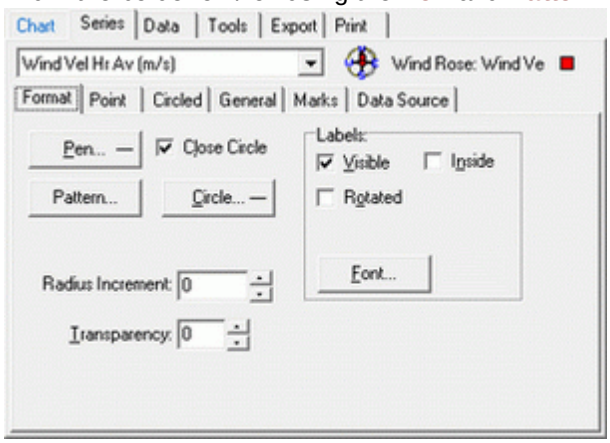
- Select the *Series* tab
- Select the *Circled* tab
- Tick the **Circled** checkbox



6. The user can also change the layout of the wind rose from within the **Editing** window shown above.
   - Turn points on / off by selecting the **Visible** checkbox in the *Series* > *Point* tab.



   - Turn the border on / off using the **Pen** and **Pattern** options in the *Series* > *Format* tab.



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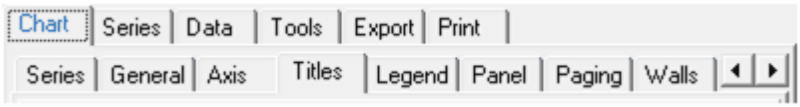
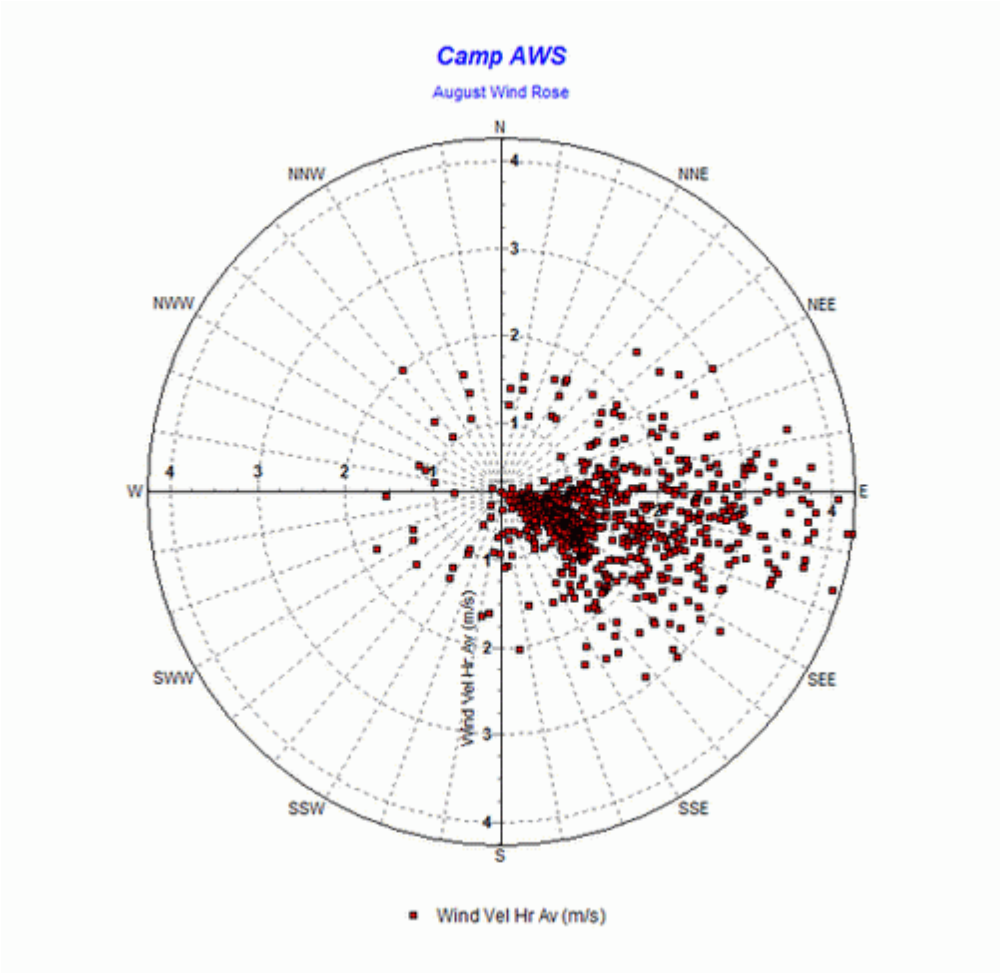
- Add a title in the *Chart* > *Titles* tab.
- Edit the Legend in the the *Chart* > *Legend* tab.





Note: When the user needs to mark wind direction points on a Wind Rose it is important to select Label from the Graph Properties window. This is shown below:

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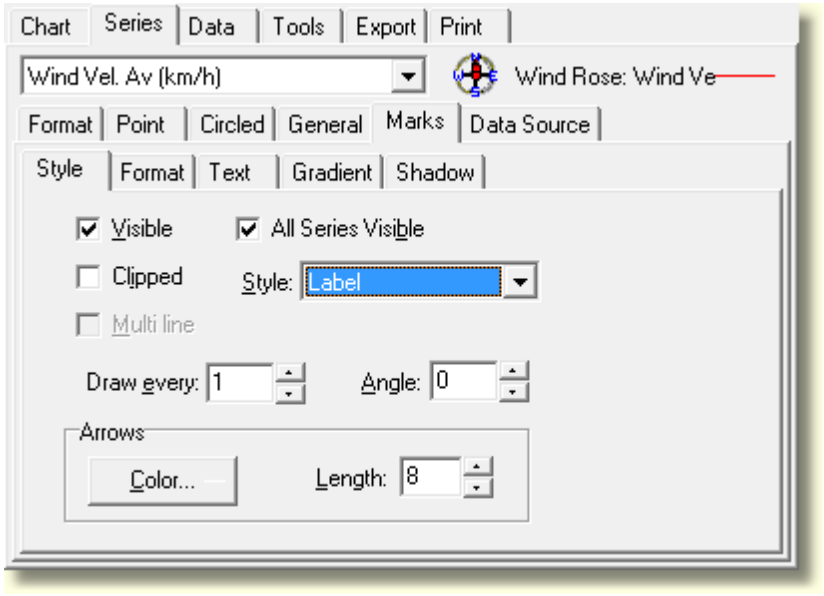

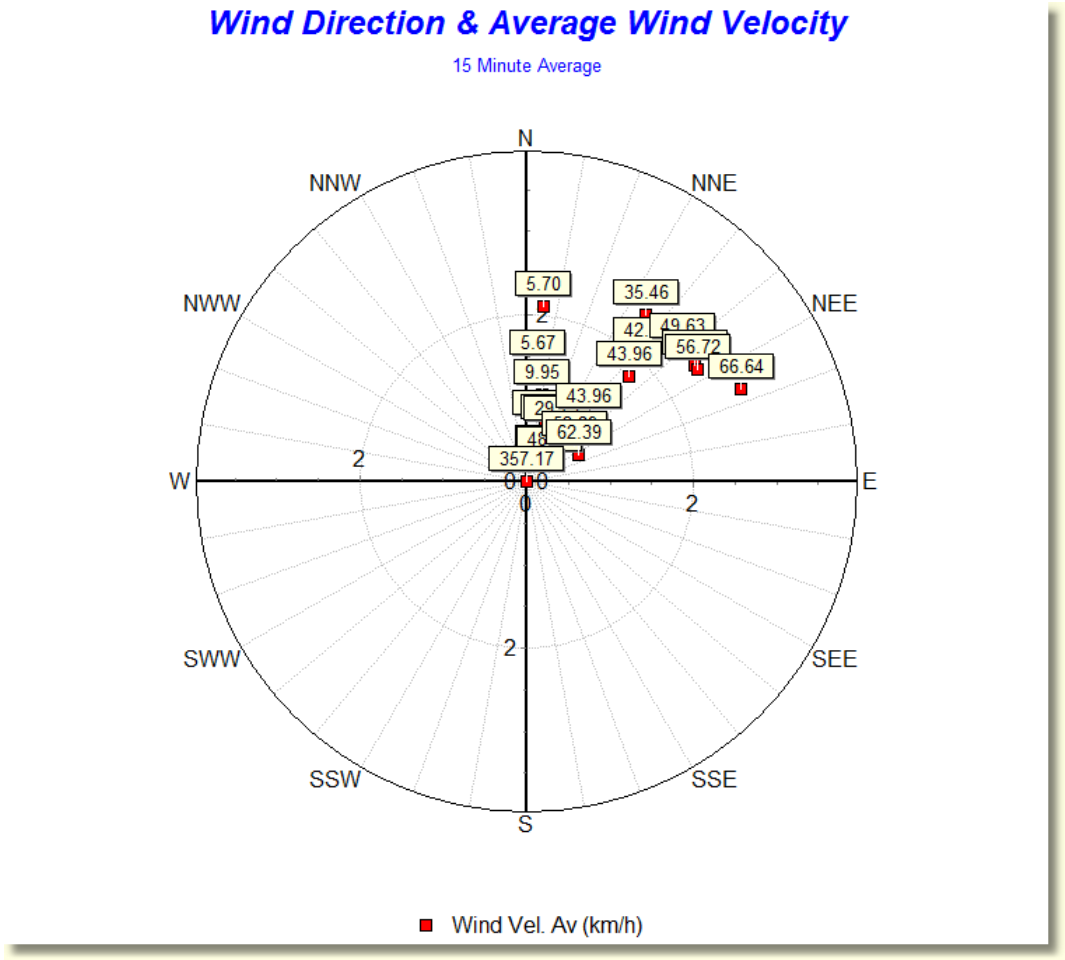

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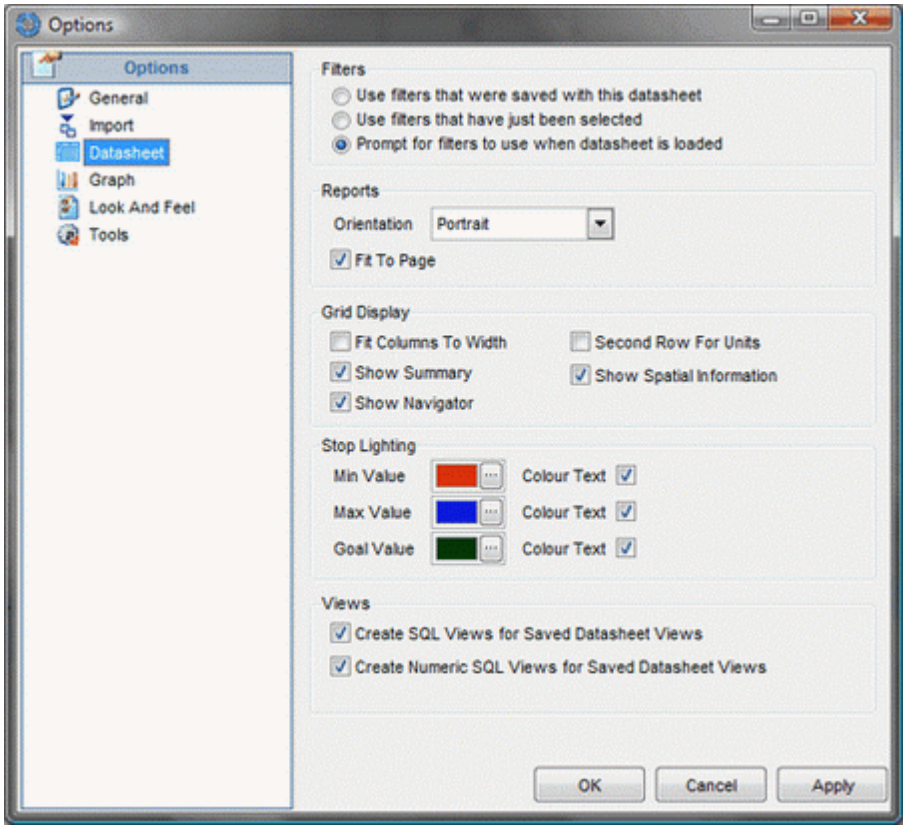
13 GIS and DataSight

DataSight data is able to link directly in to GIS software for spatial analysis.

Users must ensure they have checked the **SQL Views for Saved Datasheet Views** boxes in the Datasheet options area of DataSight.



This will allow GIS software, such as MapInfo and ArcGIS, to view and display DataSight data.

The latitude and longitude (or eastings, northings, X,Y co-ordinates, etc.) for stations is stored under Level 3 Properties.

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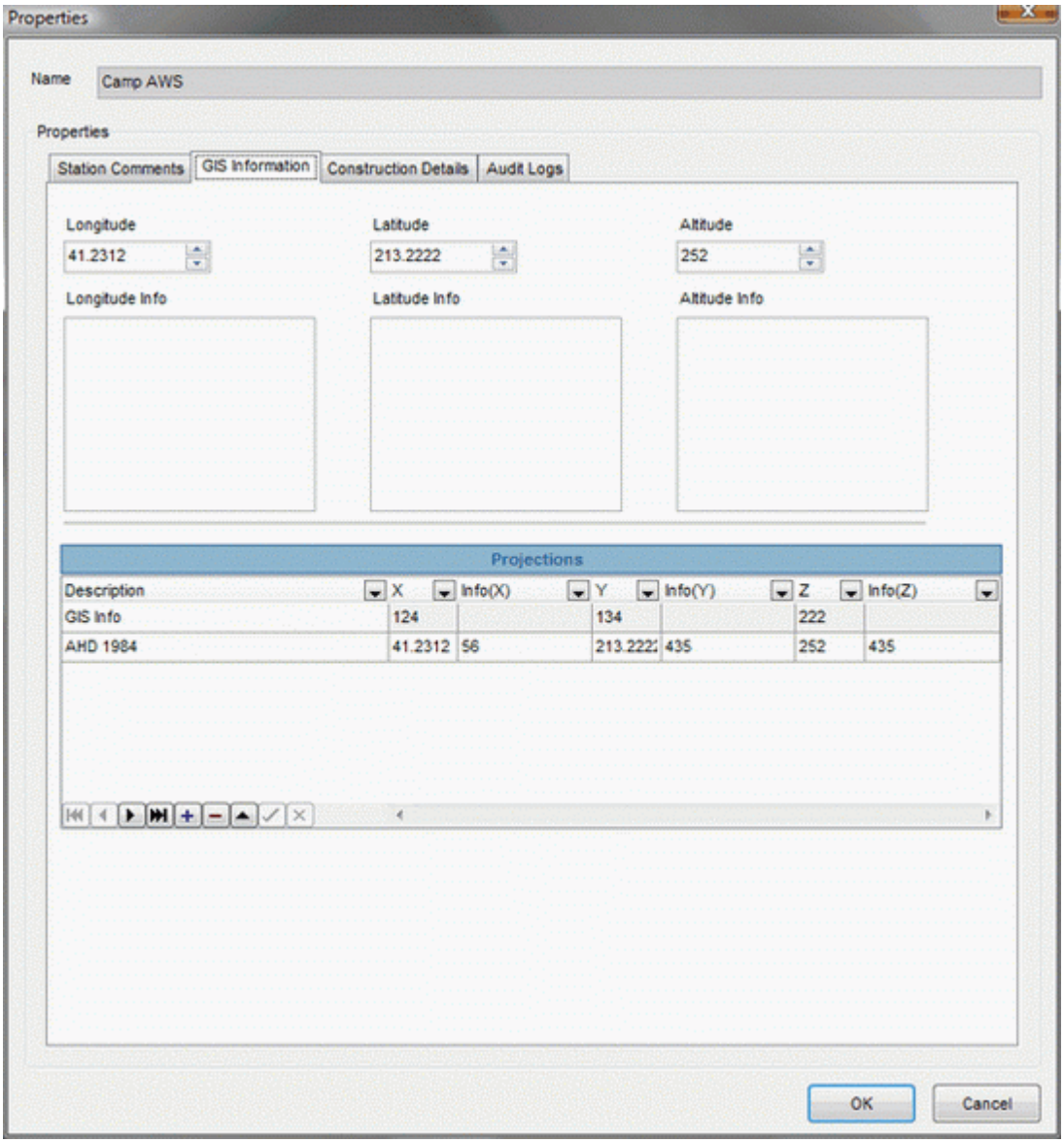

Station information, when linked with a GIS package, can then be georeferenced allowing easy access to database data for querying, analysis and reporting.

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14 Reports

There are several ways to create reports in DataSight. For data printouts, one option is to filter a datasheet and print or export the resulting data shown in the datasheet.

Users can also simply generate a graph from data in the database and either print or save a copy as a .jpg.

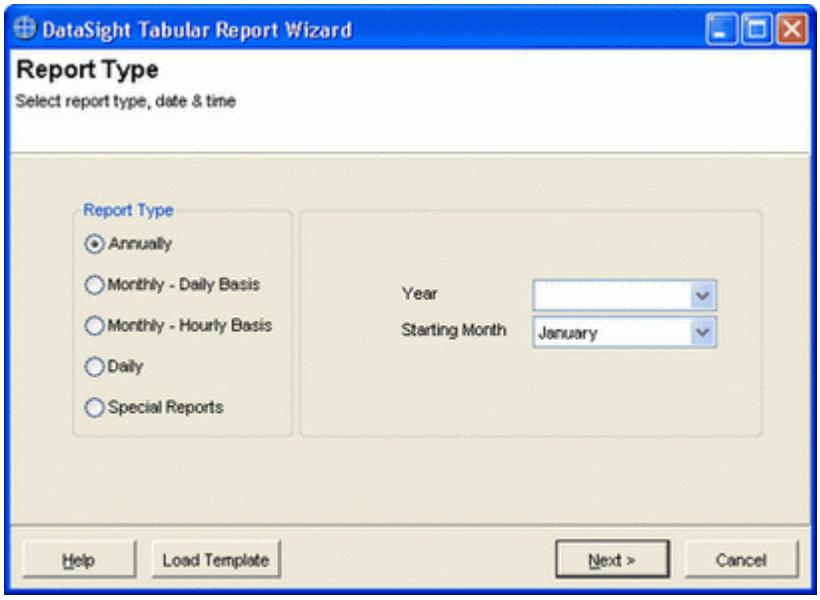
Alternatively you can elect to use one of DataSight's three different reporting tools: Scheduler, Tabular Reports and Report Creator.

14.1 Tabular Reports

Tabular Reports is a fixed type tabular reporting solution. You cannot change the report layout but you can select the various Levels and Variables that you wish to report upon. You can change the summary type (totals, averages) and output type. You can also save report templates to use them again.

To generate a Tabular Report

1. Select the Tabular Reports icon on the DataSight Toolbar. This opens the Tabular Report Wizard.



2. If you have already saved a Template for this type of report and want to use it, click the Load Template button. Click to select the appropriate template and click Open. This will load the parameters that have been saved for that report. Continue to press Next to preview and move through each subsequent step.

   Otherwise,

3. Select your Report Type and Reporting Period.

Report Type	Purpose	Reporting Period
Annual	Average or cumulative reports over 12 months	Enter Year and Starting Month
Monthly - Daily Basis	Daily averages or totals for multiple variables	Enter Year and Month
Monthly - Hourly	Monthly tabular report for individual variables in	Enter Year and Month

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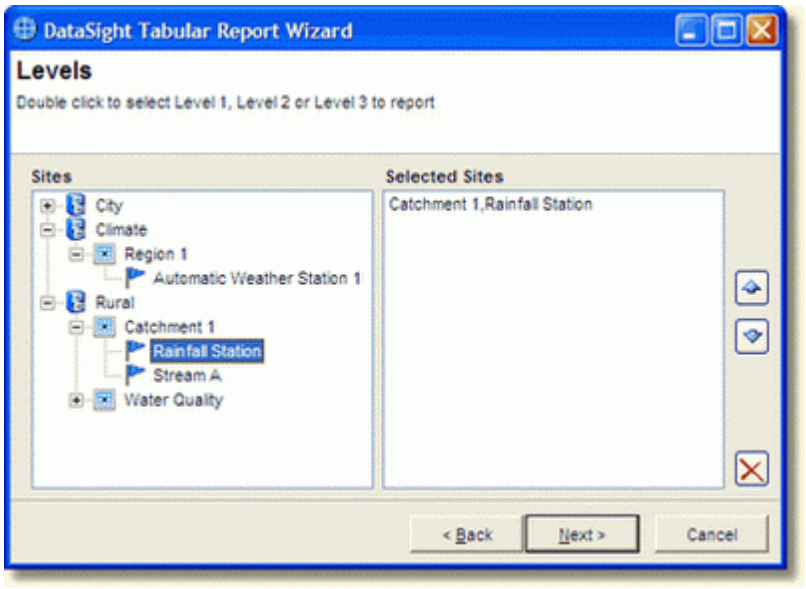
Basis	hours	
Daily	Average and total figures hourly over the day	Enter the Date
Special Reports	Specialised analytical reports for the data set • Rainfall Intensity • Operational Period Summary • Tabular Summary • Standards (Exceeding Data) • Standards Summary • Wind Direction (%)	Choose Report Type form drop dow n menu Enter dates for the reporting period

4. Click Next. The Tabular Report Wizard Levels dialogue w indow appears.



5. On the left are listed the levels available in your DataSight database for reporting. On the right is the list of your selected sites. Double click on any level to include any or all stations w ithin that level in the selected sites list. Use to clear sites from the selected sites list. Order the site list using the and keys.

6. Click Next. The Tabular Report Wizard Variables dialogue w indow appears.

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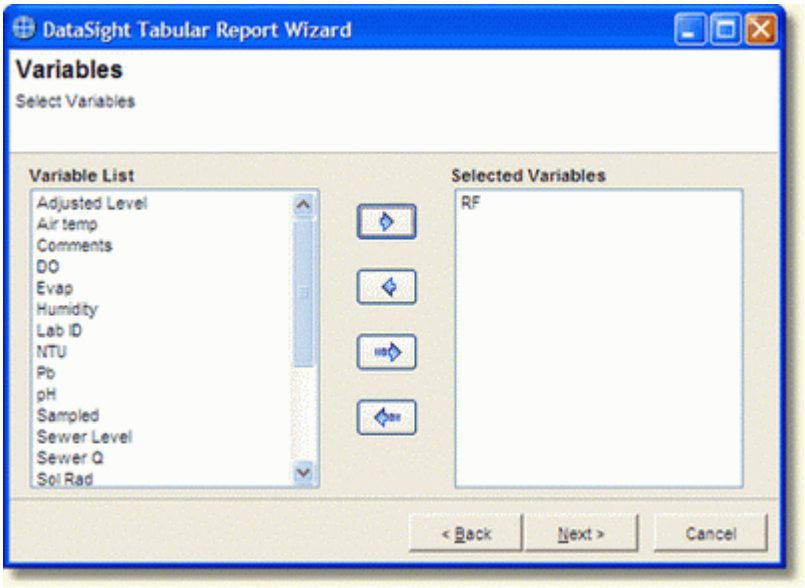
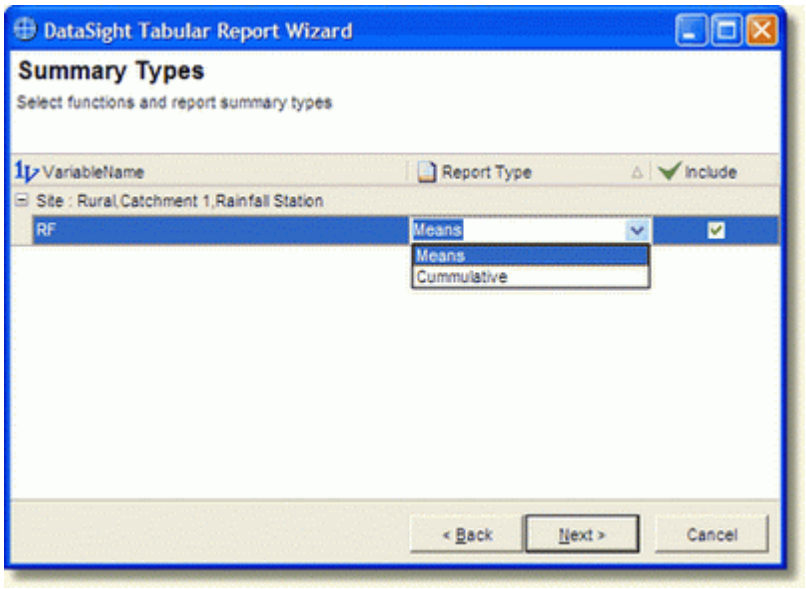


7. Select your variables by either double clicking on individual variables, or by highlighting variables and using the arrow keys.

8. Click Next. The Tabular Report Wizard Summary Types dialogue window appears.



9. Customise the the Report Type by selecting either a Cumulative or Mean data report from the drop down menus.

   Sites can also be ignored at this point by removing the tick button in the Include column.

10. Click Next. The Tabular Report Wizard Output Device dialogue window appears.

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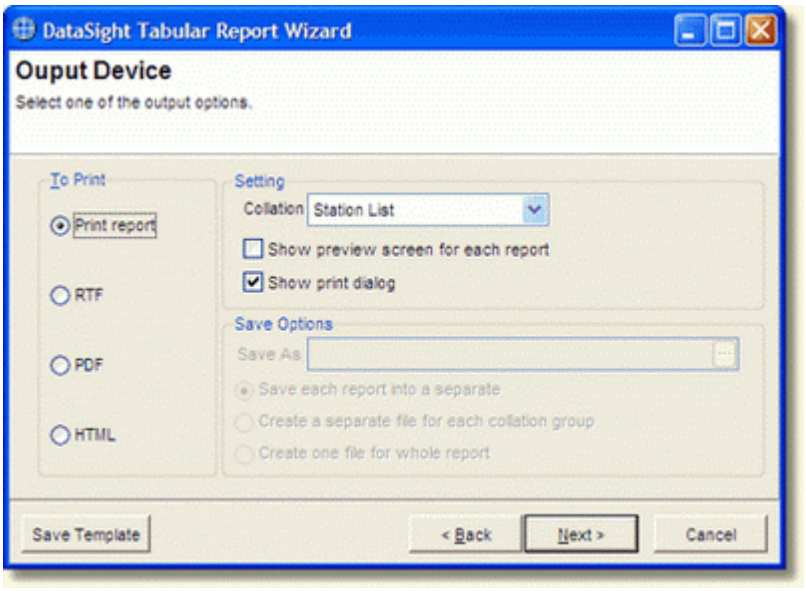
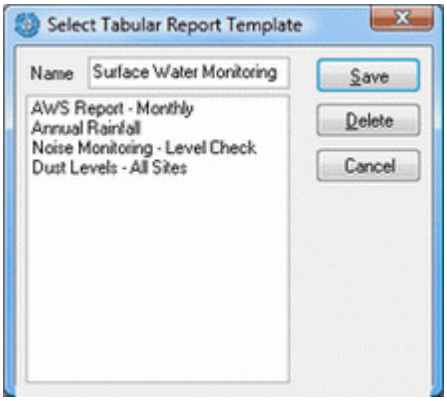


11. Select one of the Output Options from the To Print list: Print Report, RTF, PDF, or HTML. For the latter options ensure the appropriate save options are chosen. You may collate reports by variables or sites.

12. If you wish to save the report, click on Save Template.



a. Type the Name of your Report template.

b. Click Save. The Tabular Report Template dialogue window will close.

13. Click Next. The list of created tabular reports will be shown.

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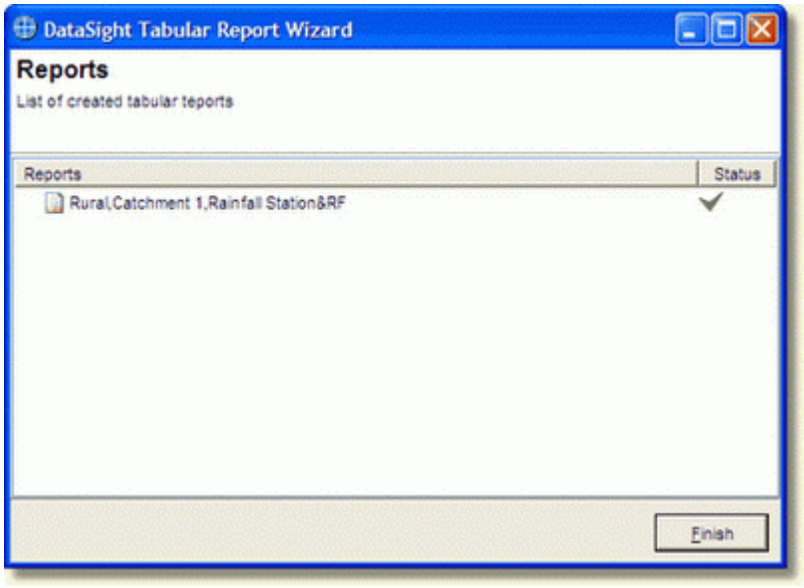
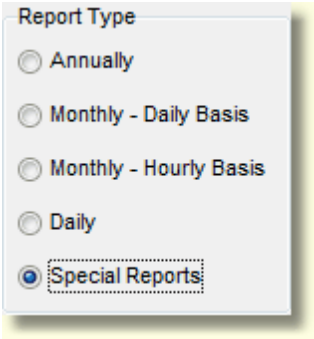


14. Click Finish to exit Tabular Reports.

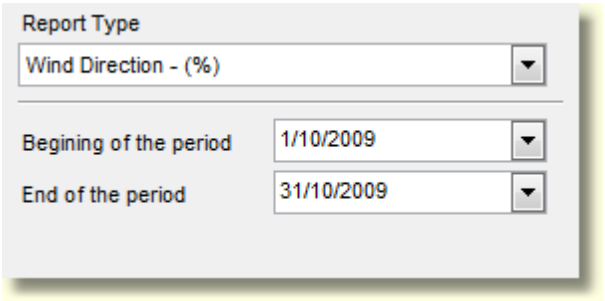
14.1.1 Example Report: Wind Rose

This example details how to create a Wind Direction Report. This report displays a wind rose showing the **frequency** of winds blowing from particular directions. The length of each "spoke" around the circle is related to the frequency of time that the wind blows from a particular direction.

1. Select **Tabular Reports** from the Toolbar.
2. Select Special Reports from the Report Type area.



3. Select **Wind Direction - (%)** along with the reporting period from the drop-down list to the right.



4. Click Next.
5. Select the Sites required for the Wind Rose report (and click Next).

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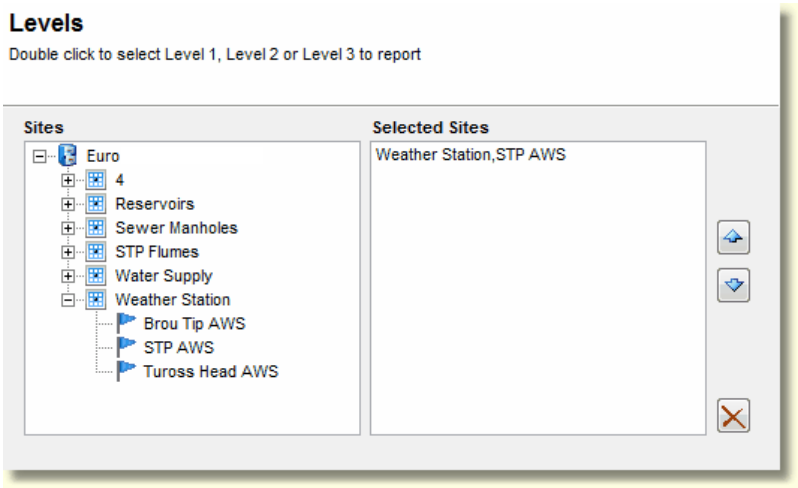
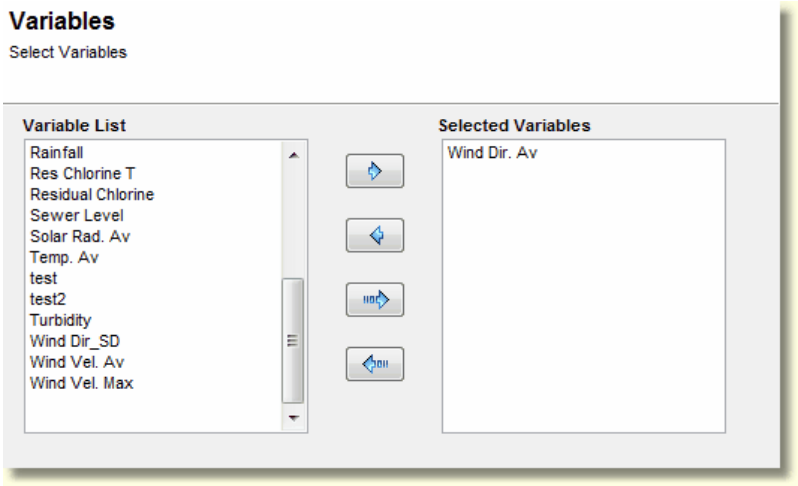
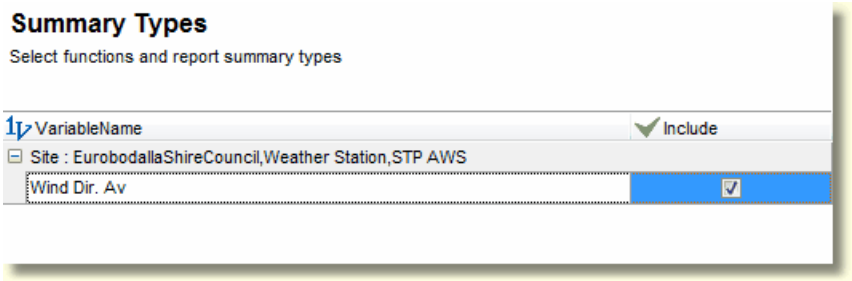


6. Select the variables to report with (e.g. Wind Direction) and click Next.



7. In the Summary window ensure your selection is correct before clicking Next.



8. Select the Output Type (PDF, Excel, direct to Printer, etc.). Enter the file location and filename if required.

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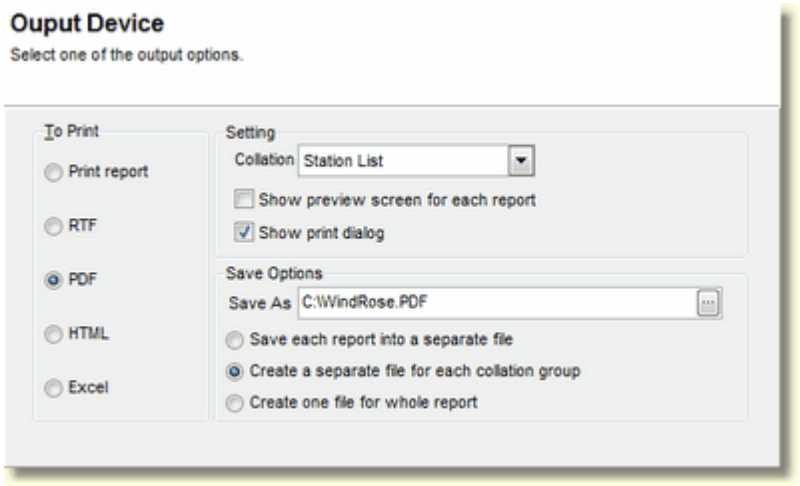
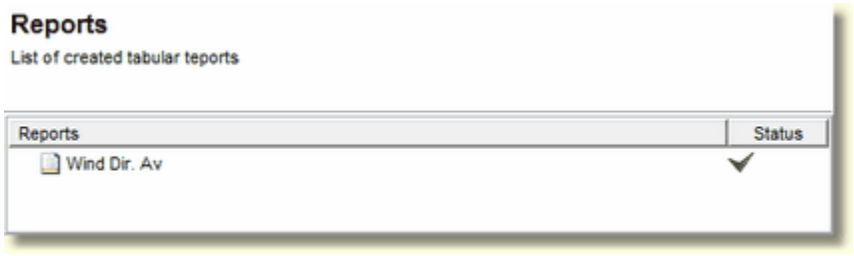
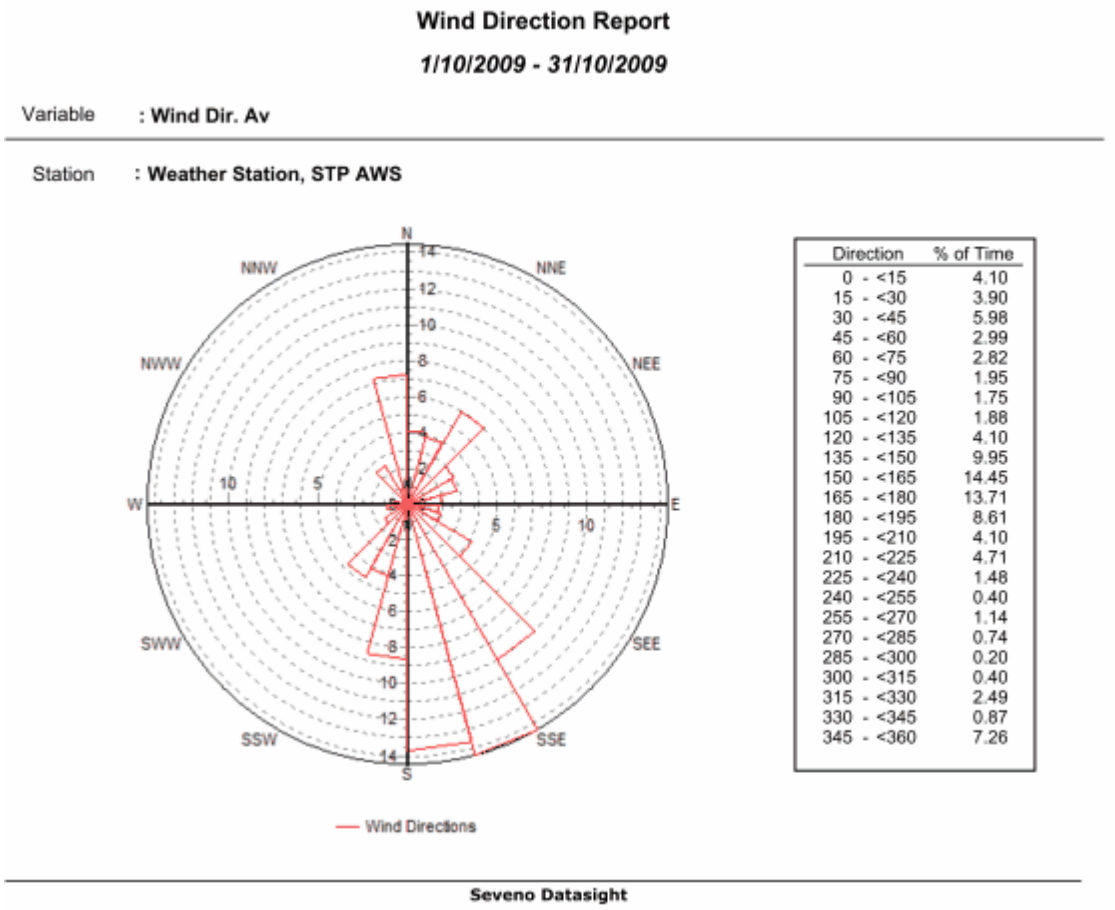


Note: at this last step the user can also elect to Save Template to use the template at a future date.

9. Upon clicking Next the report will be created:



Below is an example report output in PDF format.



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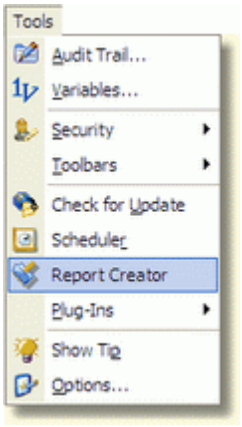
14.2 Report Creator

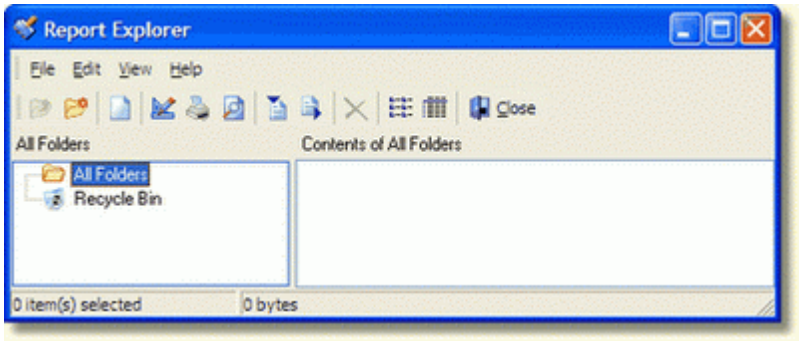
Report Creator is an end-user reporting solution. Using Report Creator you can create your own report templates and use them in DataSight. As Report Creator is also a report management tool, you are then able to share your reports with other users.

To create a new report template

1. Click Tools, Report Creator.



2. The Report Explorer dialogue window appears.



3. Select File, New Report. The DataSight ReportCreator: New Report window appears with the Design window open.

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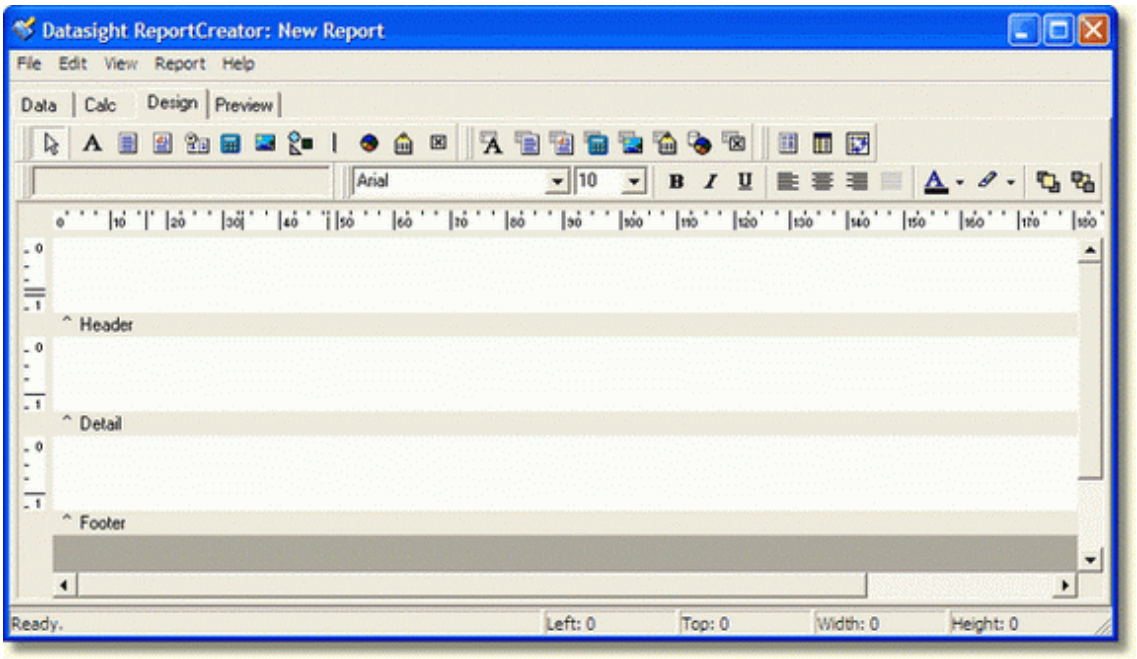
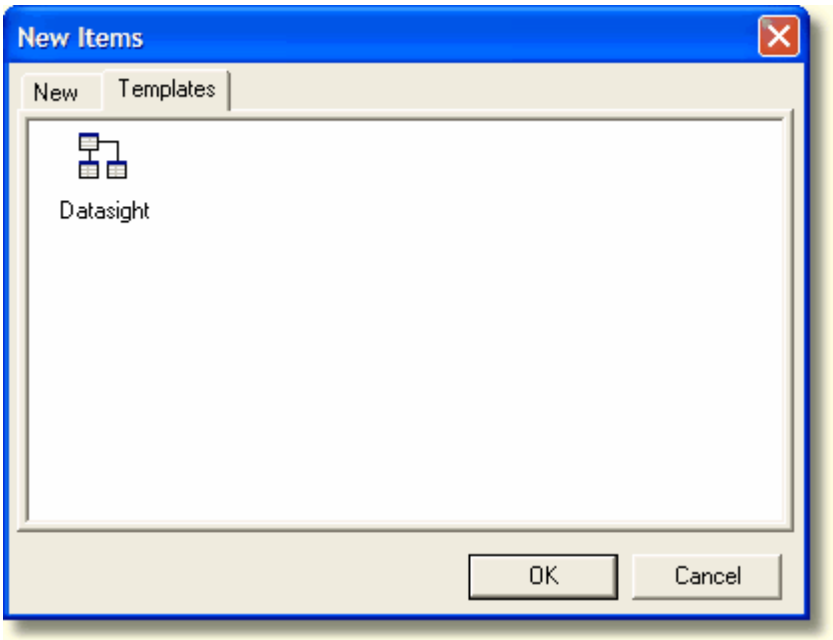


4. Select the Data tab to bring up the blank Data window.
5. Select File, New to create a new data query. The New Items template window opens.
6. Click on the Templates tab to show the DataSight Template. This query accesses all the relevant Fields and Tables within your DataSight Database.



DataSight Enterprise version has another template. DatasightNumeric has same fields with the first template plus numeric versions of the text variables. Some of the report functions like SUM, AVG etc are not able work with text variables. We need to create and use text variables to be able to use below detection symbols like <, > etc. DatasightNumeric create numeric version of the text variable to make them available to use in the calculation. If the content of the variable is not the convertible data it will be empty with the numeric version of the variable.

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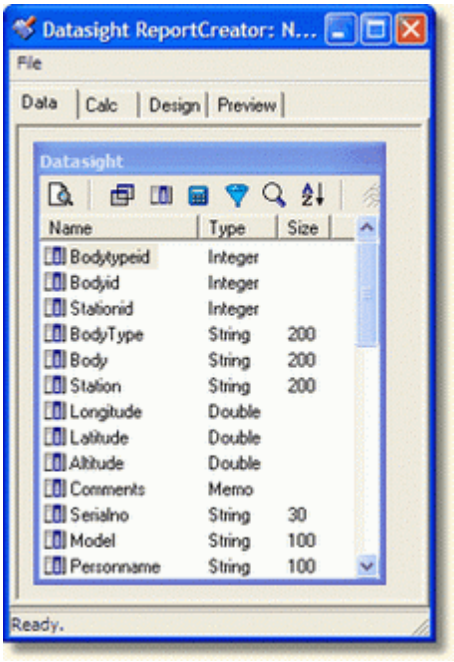
7. Double click on the DataSight Template. A query then runs to return the following list of fields from your Database to the Data window.



8. Click on the Design tab to return to the Design window.
9. Click File, Save to save the report template which now links via the data query to your DataSight database. The named template will appear in the Report Explorer window.
10. You are now ready to build your report.

To access a Report Builder User's manual, go to:

http://www.digital-metaphors.com/download/learning_reportbuilder.html

To run the report in DataSight

1. Within the Report Explorer dialogue window, highlight the Report template that you wish to export to your DataSight database.

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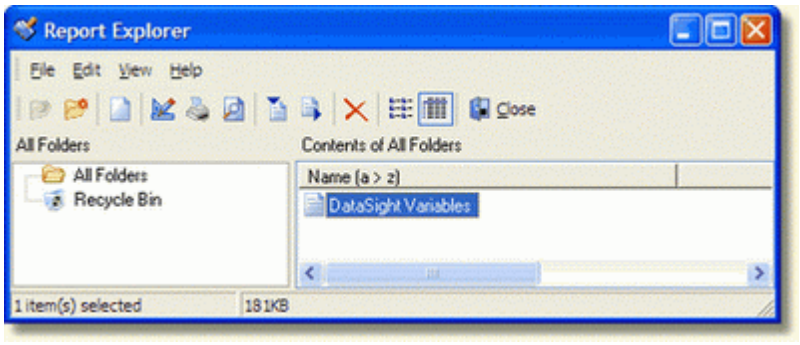
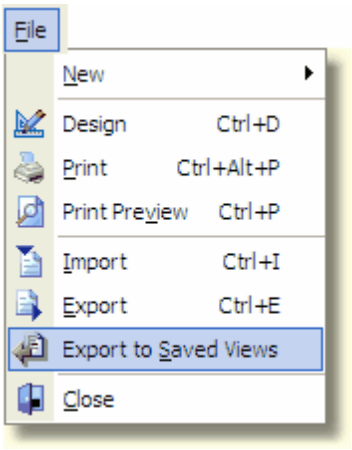
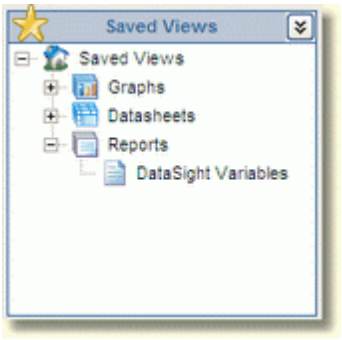
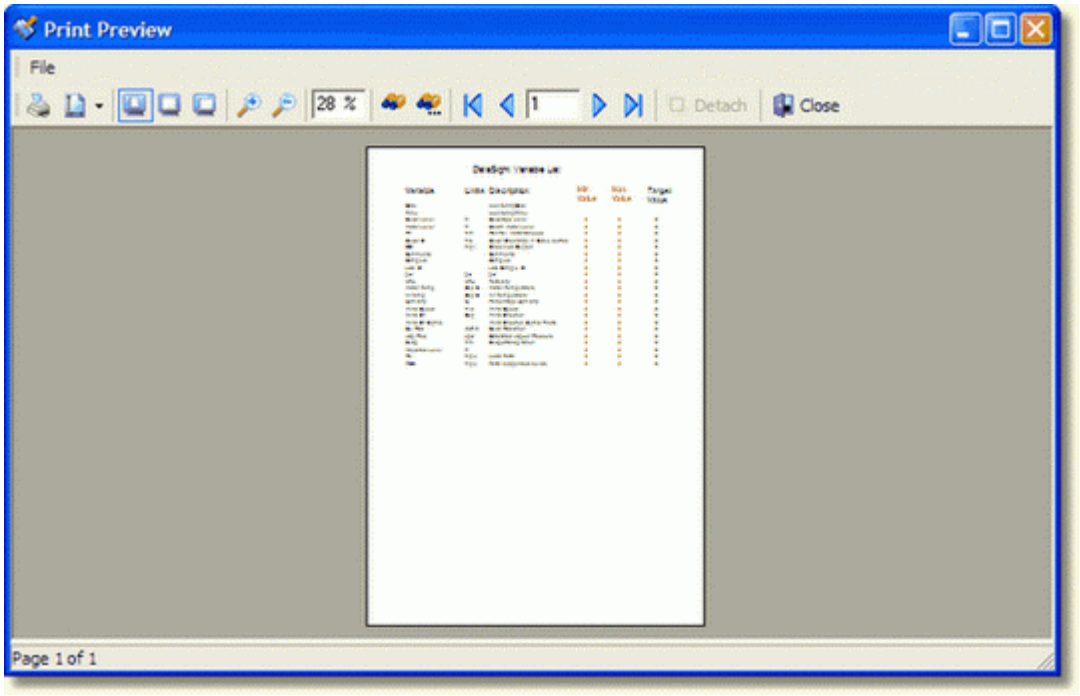


2. Select File, Export to Saved Views. The Report template will now be listed under Reports in the Saved Views panel in DataSight





3. To run the report, right-click on the report template and select Open (or double click on the report template). You can then Print Preview your report.



4. Select File, Print to choose your output (Printer or Print to File).

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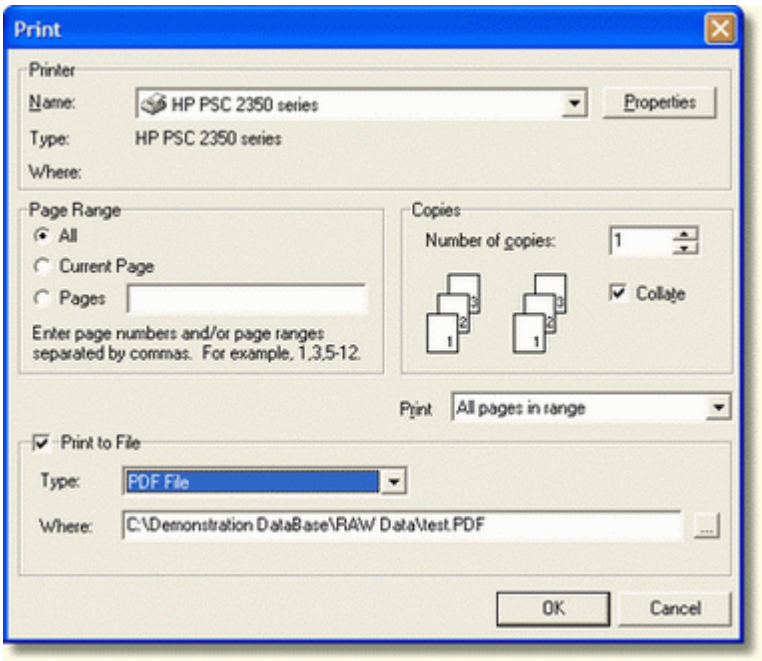

5. Select OK and then Close the Print Preview window.

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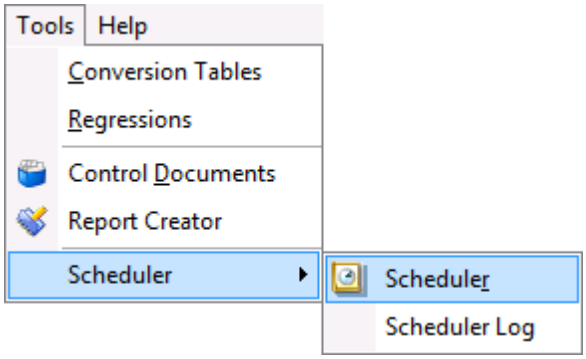
15 Scheduler

DataSight has a facility for generating a report based on an existing saved graph, datasheet, calculation or report. The output can be in a pdf (Adobe Acrobat), RTF, HTML, JPG or xls (Microsoft Excel datasheet) format. The user also has the option to email the output file to a number of recipients. To set up scheduled email reporting please revisit the Options section under Setting up the DataSight Database.

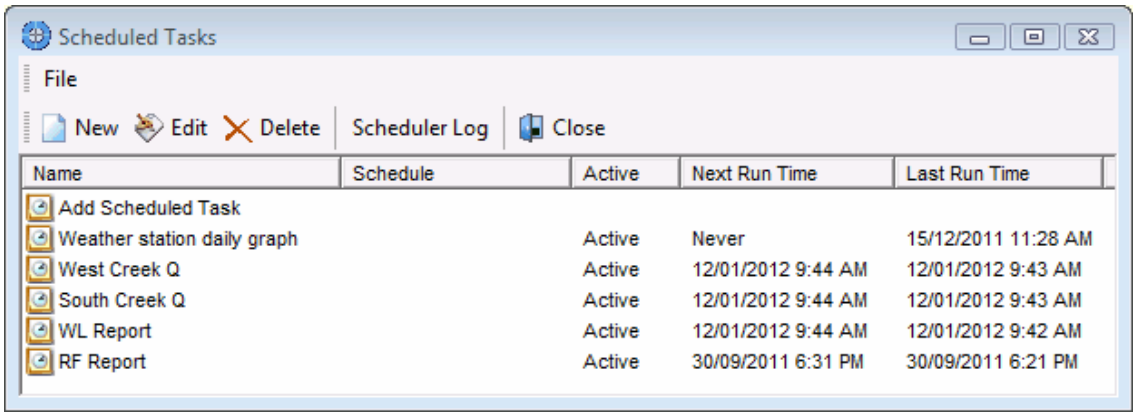
Reports can be regenerated periodically with the same file name, or DataSight can automatically increment file names such as Temp 001.jpg, Temp 002.jpg...

Once you have set the appropriate filters on your data and saved the results as a Graph or Datasheet...

1. Click Tools, Scheduler



2. The Scheduled Tasks dialogue box will appear.



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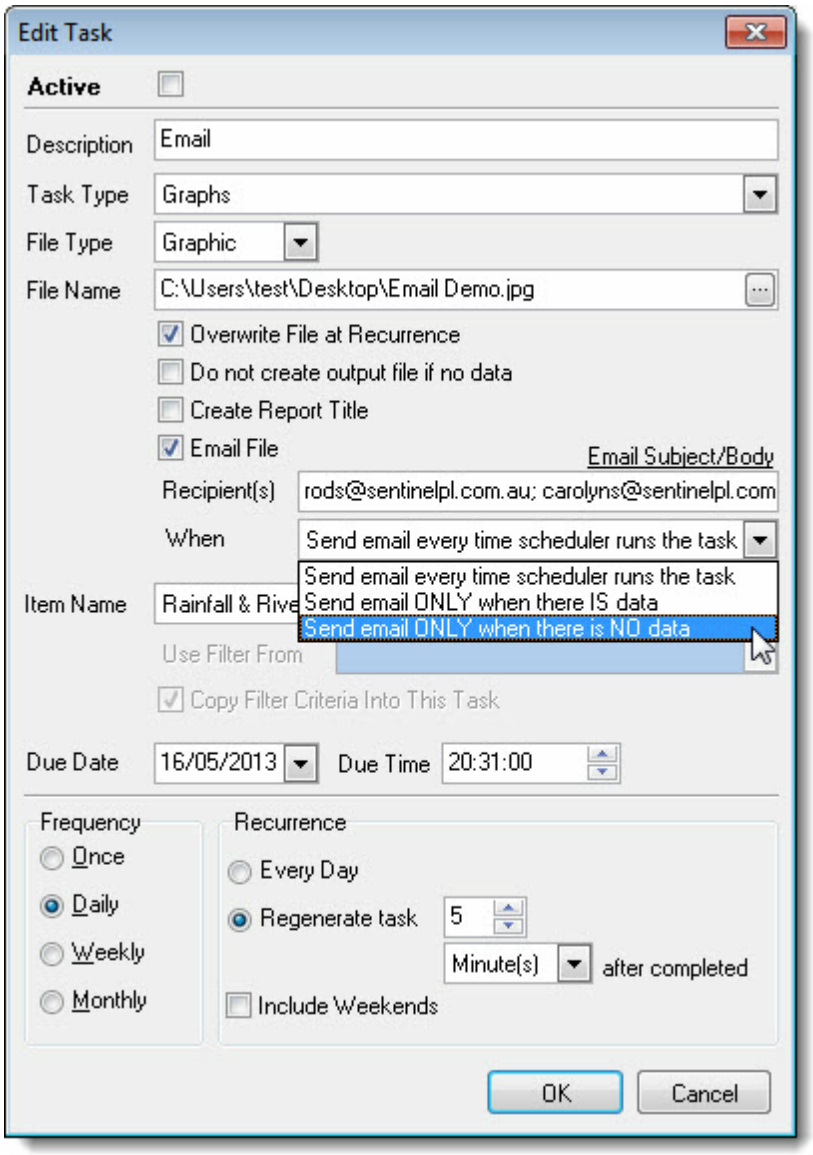
15.1 Scheduling Tasks

Add a Task

1. Click the New icon on the menu, or double-click the Add Scheduler Task icon and the Edit Task dialogue box appears.



2. Check Active to make the task enabled and running. Uncheck to disable the task. Tasks scheduled to run once will be inactive after one run.
3. Type in a Descriptive name for the task.
4. Use the Task Type drop down menu to select either Graphs, Datasheets, Reports, Calculations or Email Documents.
5. Select File Type from drop down list.
6. Enter the File Name with the destination folder.
7. If you are scheduling the recurring creation of a the report you can select to overwrite file at recurrence.

   if you select this option note that each time a report is generated the new output will overwrite the existing file.

   If you tick the checkbox for "Do not create output if no data" the you avoid overwriting the last output file that

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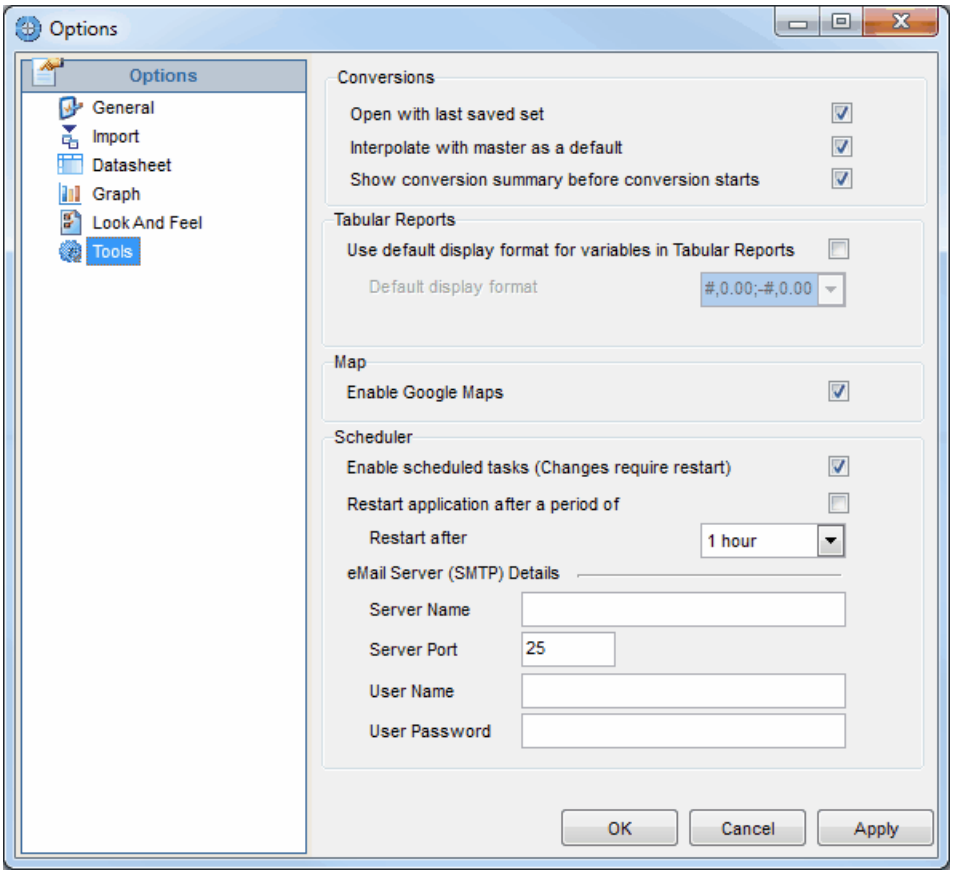
contained data.

8. DataSight can create and add a Report Title to the output file. Check or uncheck this box to Enable / disable the Report Title.
9. The generated output file can be emailed to one (or more) recipients.

   Simply check the box and enter an email address. When entering more than one email address, separate each address with a comma.

   You can choose one of three options when emailing the results of your task. You can choose to send an email every time the scheduler runs the task, or only send an email when data is found, or only send an email when there is no data. Having the ability to receive an email notification from the scheduler if data has not arrived can be great for your data management

   Note: please ensure the user has entered the correct email server (SMTP) details in the **Tools** area of the **DataSight Options** (access via **Settings** on the toolbar).

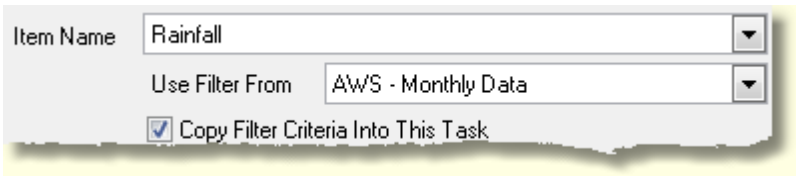


10. Choose the Saved Graph, Datasheet, Calculation or Report from the Item Name list. This defines the filter conditions that you are going to use for the task.

Important: **For Task Type - Reports**

Saved Reports must have an associated Saved Datasheet or Saved Graph which contains the filter settings to be applied to the report.

Once you have selected the Report, select the associated datasheet or graph from the Use Filter From drop down list.



In the example above the filter applied to the saved **AWS - Monthly Data** graph or datasheet will be applied to the

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report '**Rainfall**'.

For Task Type - Calculations

Saved Calculations must have associated filter settings to be applied to the report. These can be taken from a Saved Datasheet.

Once you have selected the Calculation, select the associated Datasheet from the Use Filter From drop down list.

11. Set the date and time that you wish the report to run.
12. Set the Frequency, Recurrence and Regeneration options.
13. Click OK.

Edit a task

1. Click Tools, Scheduler
2. The Scheduled Tasks dialogue box appears..
3. Right-click on the task and select Edit.
4. Make any required changes
5. Click OK.

Delete a task

1. Click Tools, Scheduler
2. The Scheduled Tasks dialogue box appears..
3. Right-click on the task and select Delete.
4. You will be asked to confirm the selected deletion.
5. Click OK.

Checking tasks assigned to a Graph or a Datasheet

1. Right-click on any saved Graph or saved Datasheet and select Properties.
2. Scheduled tasks are listed.

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16 Conversion Tool

16.1 Conversion Tool Introduction

The Conversion tool is an extremely flexible tool allowing the user to use either "look up tables" or "interpolation tables" along with free hand formula's or a combination of each to adjust and modify data.

In brief the user can

- Convert data using look up/interpolation tables
- Convert data using free hand formulas
- Convert or adjust data using time shift with either absolute or percentage values
- Use the data from multiple stations or multiple variables to undertake conversions
- Generate new data and place in a variable
- Relocate data to appropriate variable
- Undertake Scientific unit conversion
- Review Modified data in the Conversion graph
- Review tabular data in the Conversion data grid

It is important that the user understands from the onset that the Conversions does not undertake any review of the accuracy or validity of the data being adjusted, generated or calculated. The accuracy is the sole responsibility of the user. We recommend that the user create two or three variables that are used for reviewing calculated data. In many cases we add three variables normally Calc 1, Calc 2, Calc 3 for all data modified or generated. This allows the user to review the data before relocating to the final variable.

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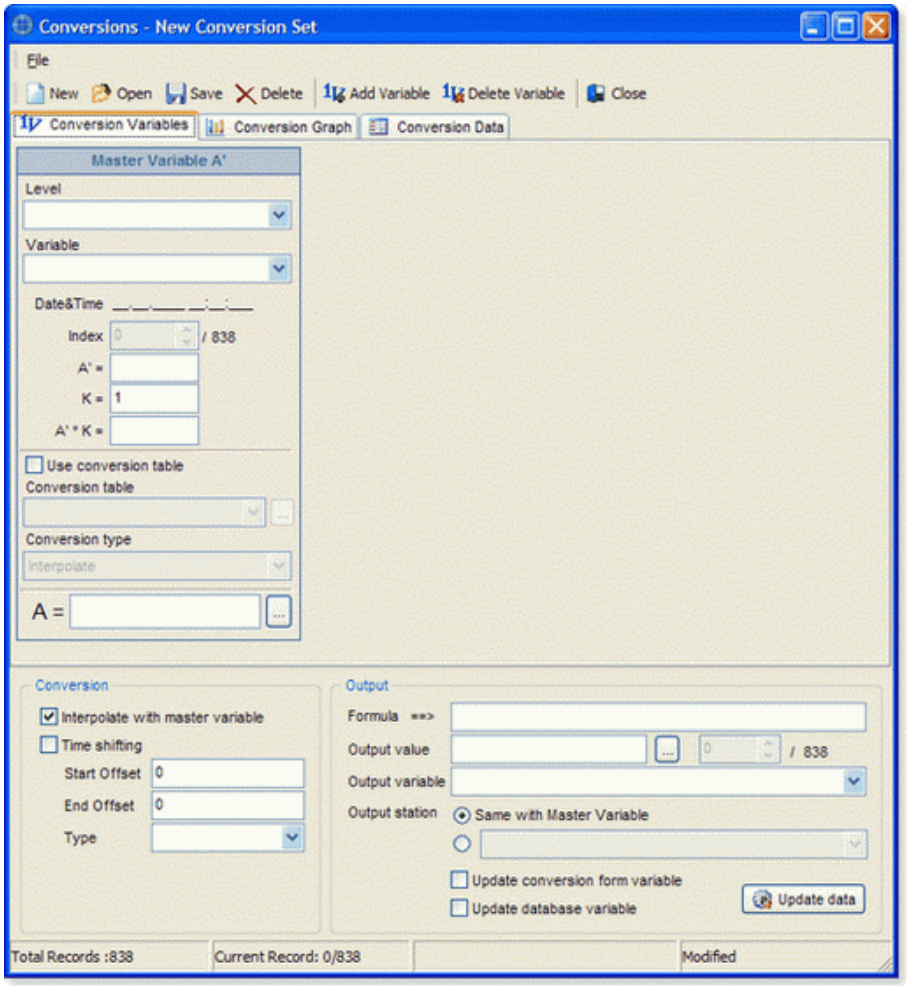
Conversion Tool

The Conversion Tool is accessed from within the Datasheet area of DataSight.

1. Users must ensure the variables they wish to use in the calculation or conversion (including the Calc variables) are checked in the Field List and visible within the datasheet.
2. *Right-click* your mouse in the Datasheet window and select **Conversions**.
3. The Conversion Tool will open.



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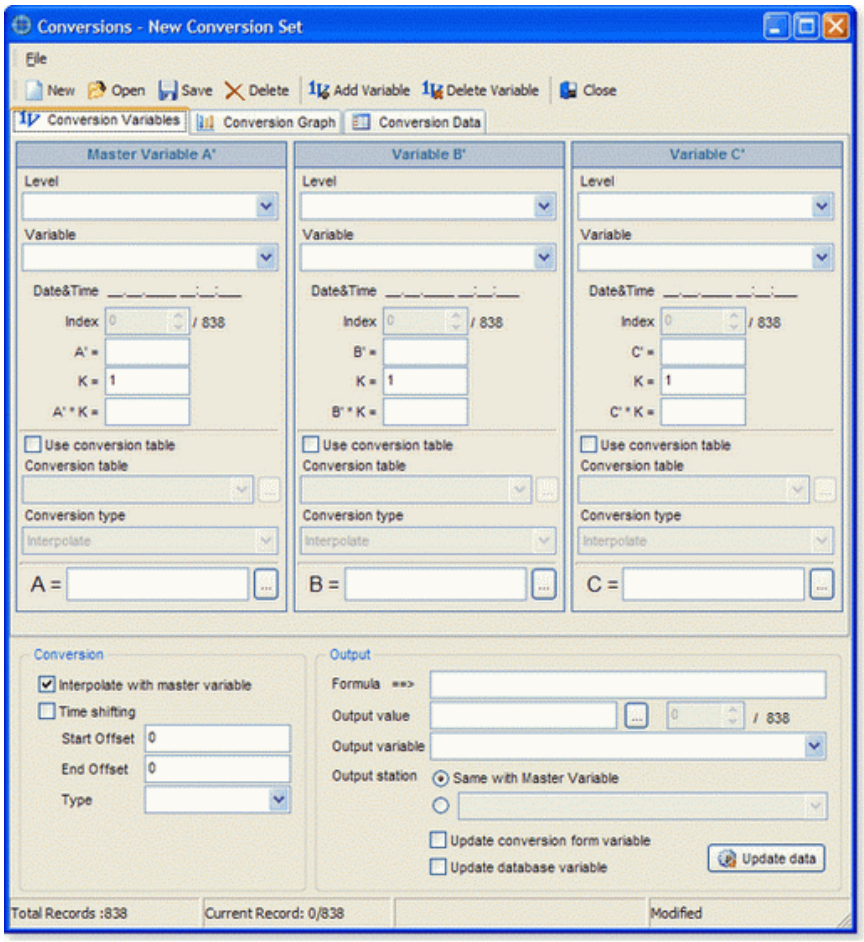
Multiple variables can be used in the calculations. Only stations, variables and actual data that are displayed in the DataSight Datasheet are accessible.



Once you have completed the conversion you can Save the Set (located at the top of the screen) if you wish to use this specific conversion again. The conversion set can be stored on the network allowing any other users to use your same conversion set.

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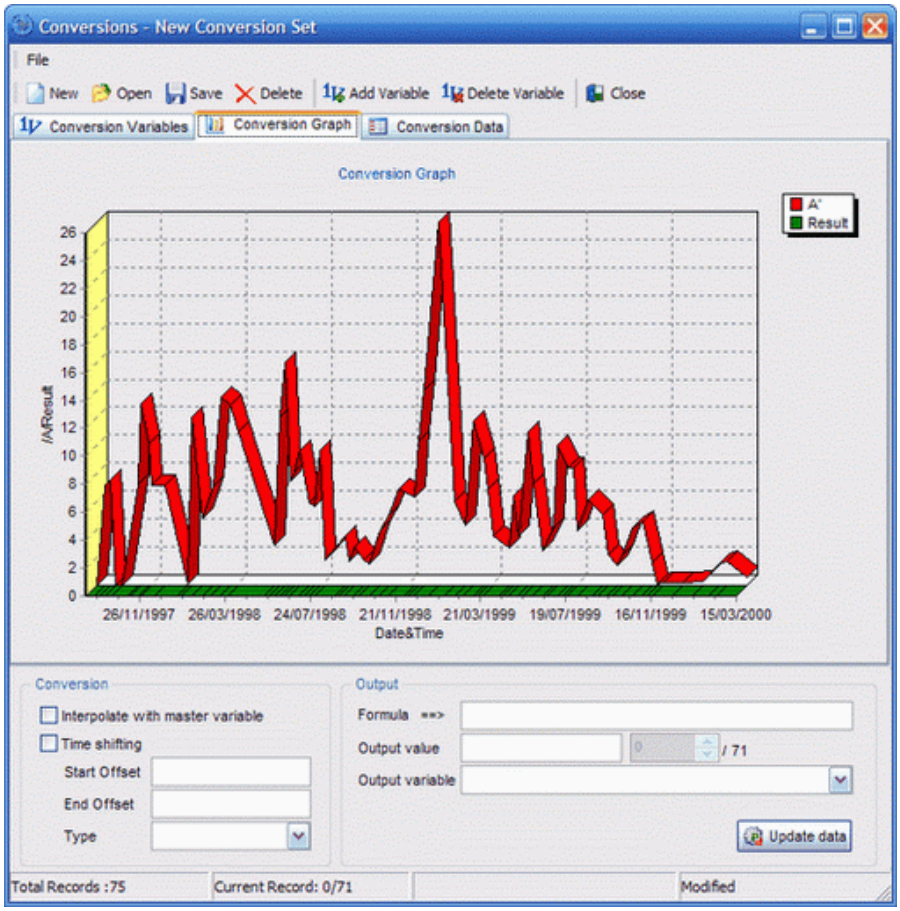
The Conversions also has a conversion data graph that will display the data you have converted against the original data.

You can also access all of the standard graphing options by right clicking your mouse within the graph area. This includes exporting the graph as a JPG image, etc.



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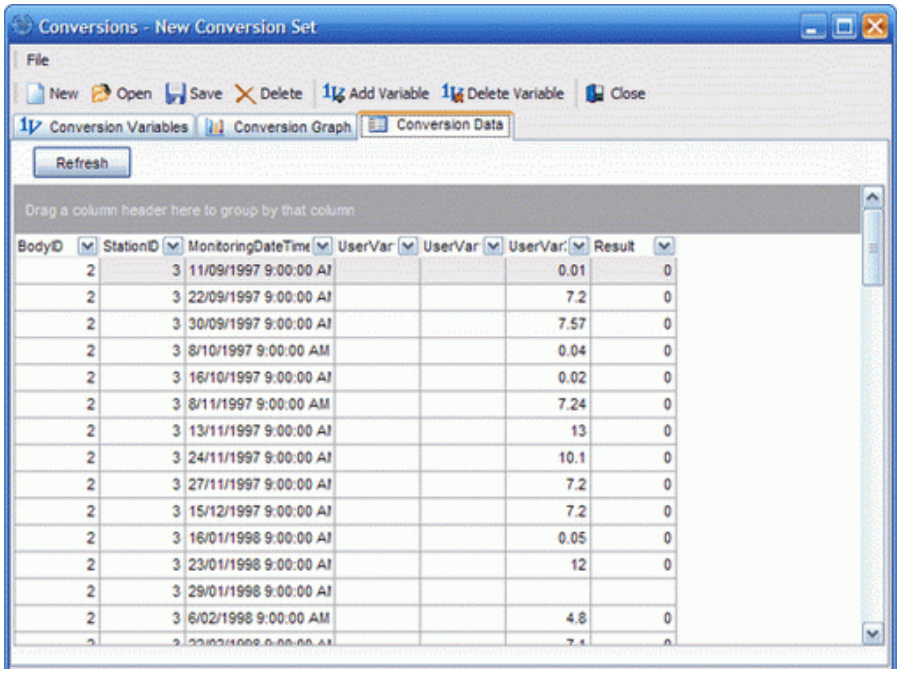
The Conversion Tool also includes a Conversion Data area which displays the data in grid format.



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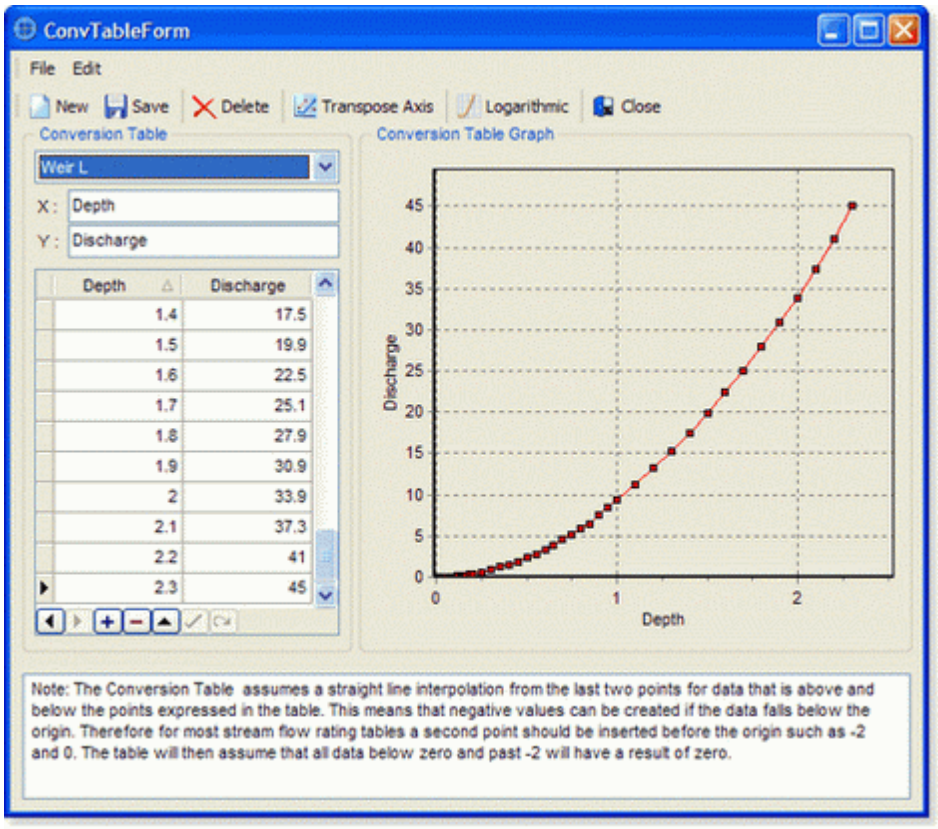
Conversion tables can also be used. There is no limit to the number of points. Betw een each point the conversion tool uses a linear interpolation to calculate data betw een points. If data is above or below the values specified in the table the slope of the line is continued and the data calculated. Extreme care has been taken to ensure the accuracy of the data. How ever, w e do recommend that the user conducts a review of the data to ensure the conversion is valid for their specific circumstance.


ConvTableForm
File Edit
New Save Delete Transpose Axis Logarithmic Close
Conversion Table
Weir L
X: Depth
Y: Discharge
Depth Discharge
1.4 17.5
1.5 19.9
1.6 22.5
1.7 25.1
1.8 27.9
1.9 30.9
2 33.9
2.1 37.3
2.2 41
2.3 45
Conversion Table Graph
Discharge
Depth
0 5 10 15 20 25 30 35 40 45
0 1 2
Note: The Conversion Table assumes a straight line interpolation from the last two points for data that is above and below the points expressed in the table. This means that negative values can be created if the data falls below the origin. Therefore for most stream flow rating tables a second point should be inserted before the origin such as -2 and 0. The table will then assume that all data below zero and past -2 will have a result of zero.

16.2 Conversion Tool Overview

The Conversion Tool

The DataSight Conversions tool is designed to enable the user to manipulate the data that is w ithin DataSight. The Conversions are linked directly to the Datasheet w ithin DataSight. Therefore only data that can be seen w ithin the Datasheet is available for manipulation by the Conversion tool. This can be across multiple stations and multiple variables. By using data that is only in the Datasheet the user can isolate only the data that requires modification. The Conversion tool also allow s the user to save conversion sets and look up tables.

The speed of the conversion changes betw een DataSight Desktop and DataSight Enterprise. We recommend that the user undertakes conversions in reasonable sizes. For example w ith DataSight Desktop it takes under 2 minutes to complete the conversion of 9,000 data points. This w ould equate to approximately 12 months of hourly data. But performance of the conversions is really dependent of you computers performance.

The Conversion tool is extremely flexible and pow erful allow ing the user to use look up tables, free hand formula, off set adjustments in proportion to time for both absolute and percentage changes. This is extremely important for adjustment of w ater quality data as sensors are affected by algal grow th. Data form several different sites can also be modified.

We recommend that if the user is undertaking a significant amount of data manipulation that they generate three additional

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variables. In most cases we use Calc 1, Calc 2 and Calc 3. These additional variables allow the user to manipulate, modify the data set and save it into a generic variable which they can then verify before placing into the final variable.

The following is to be used as a guide only.

No warranty is given as to the accuracy of the calculations.

This is the user's responsibility and all calculations should be checked.

By using the Conversion Tool the user warranties Seveno against any claims.

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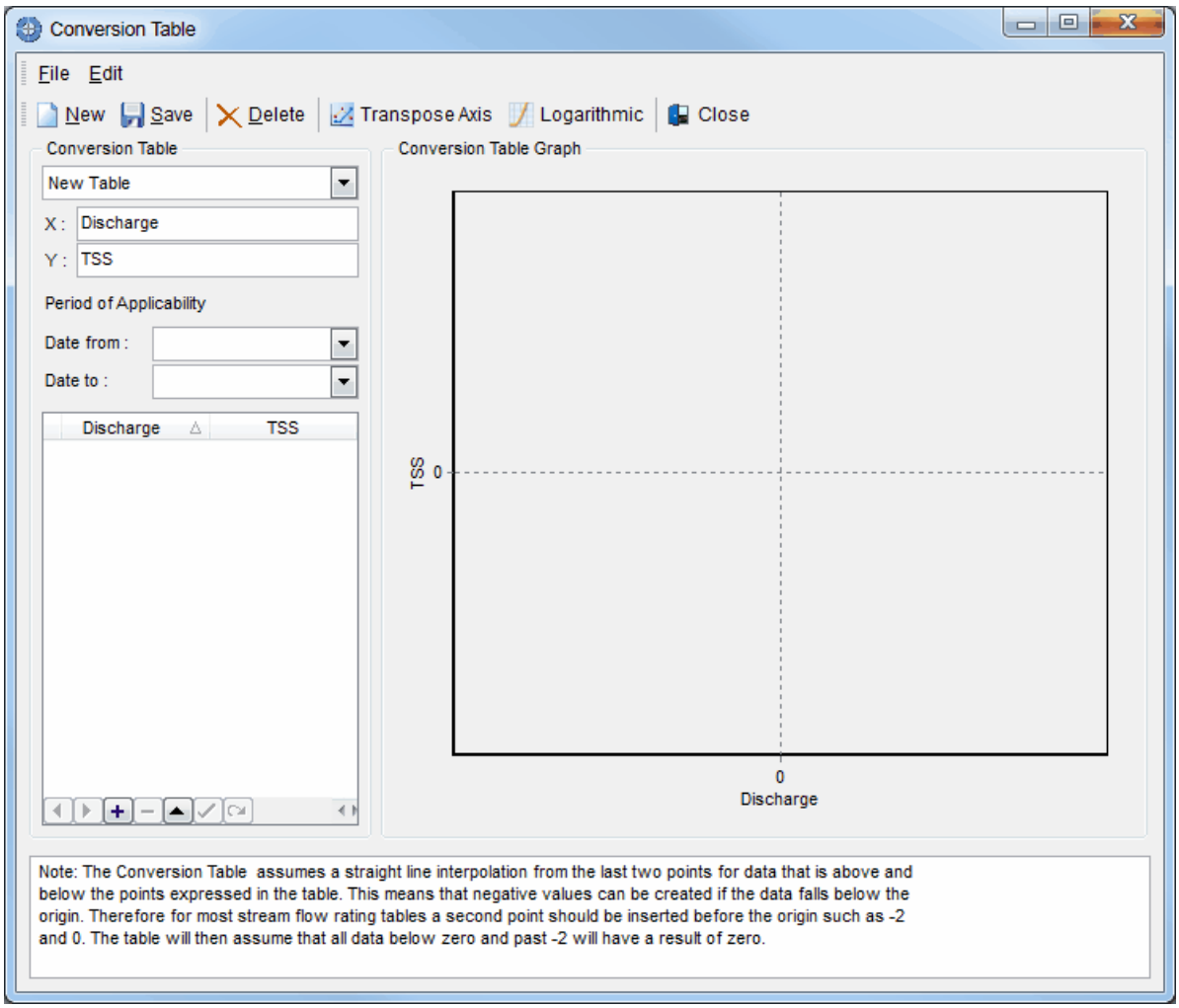
Conversion Table Layout


Conversion Table
File Edit
New Save Delete Transpose Axis Logarithmic Close
Conversion Table
New Table
X : Discharge
Y : TSS
Period of Applicability
Date from :
Date to :
Discharge
TSS
Conversion Table Graph
TSS
0
0
Discharge
Note: The Conversion Table assumes a straight line interpolation from the last two points for data that is above and below the points expressed in the table. This means that negative values can be created if the data falls below the origin. Therefore for most stream flow rating tables a second point should be inserted before the origin such as -2 and 0. The table will then assume that all data below zero and past -2 will have a result of zero.

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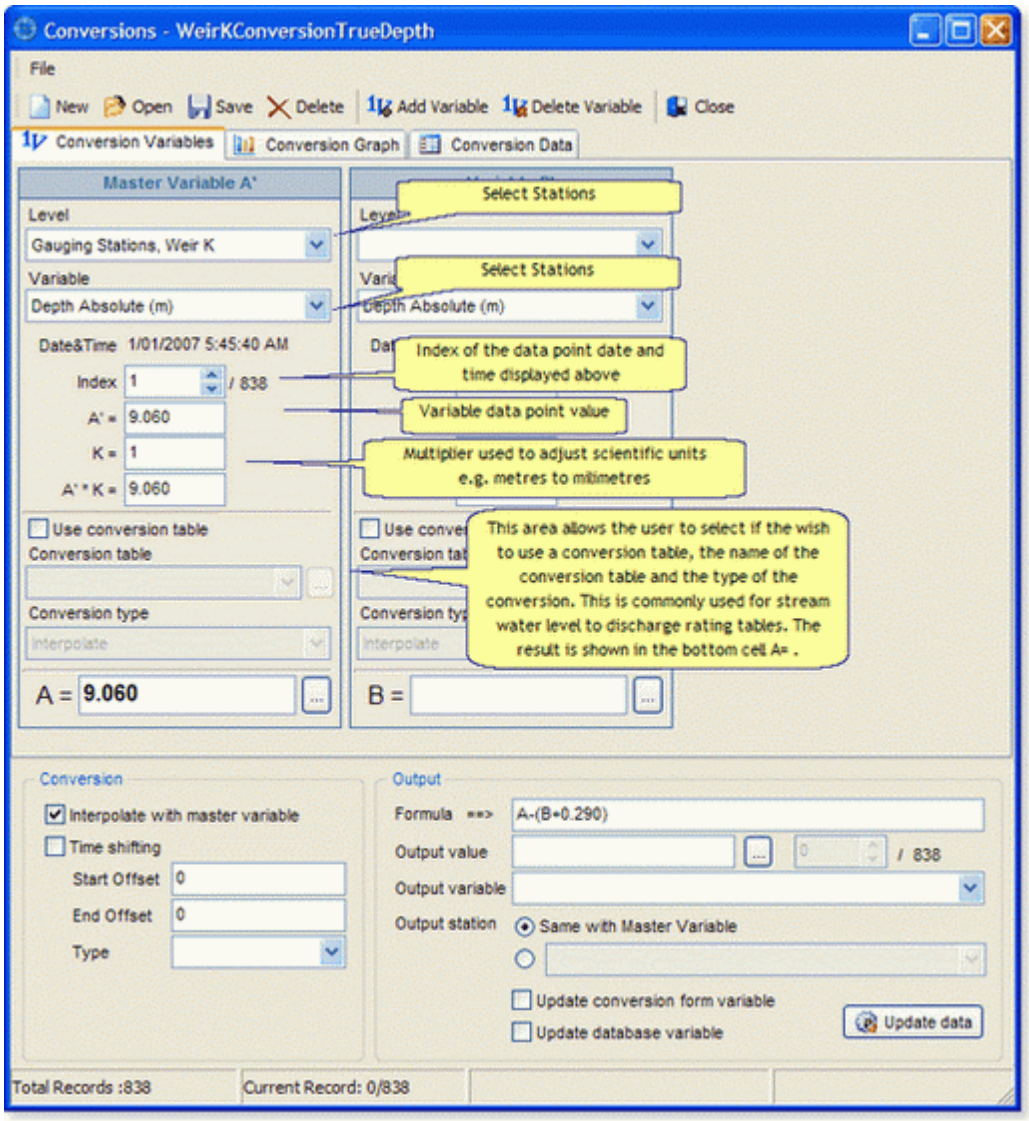

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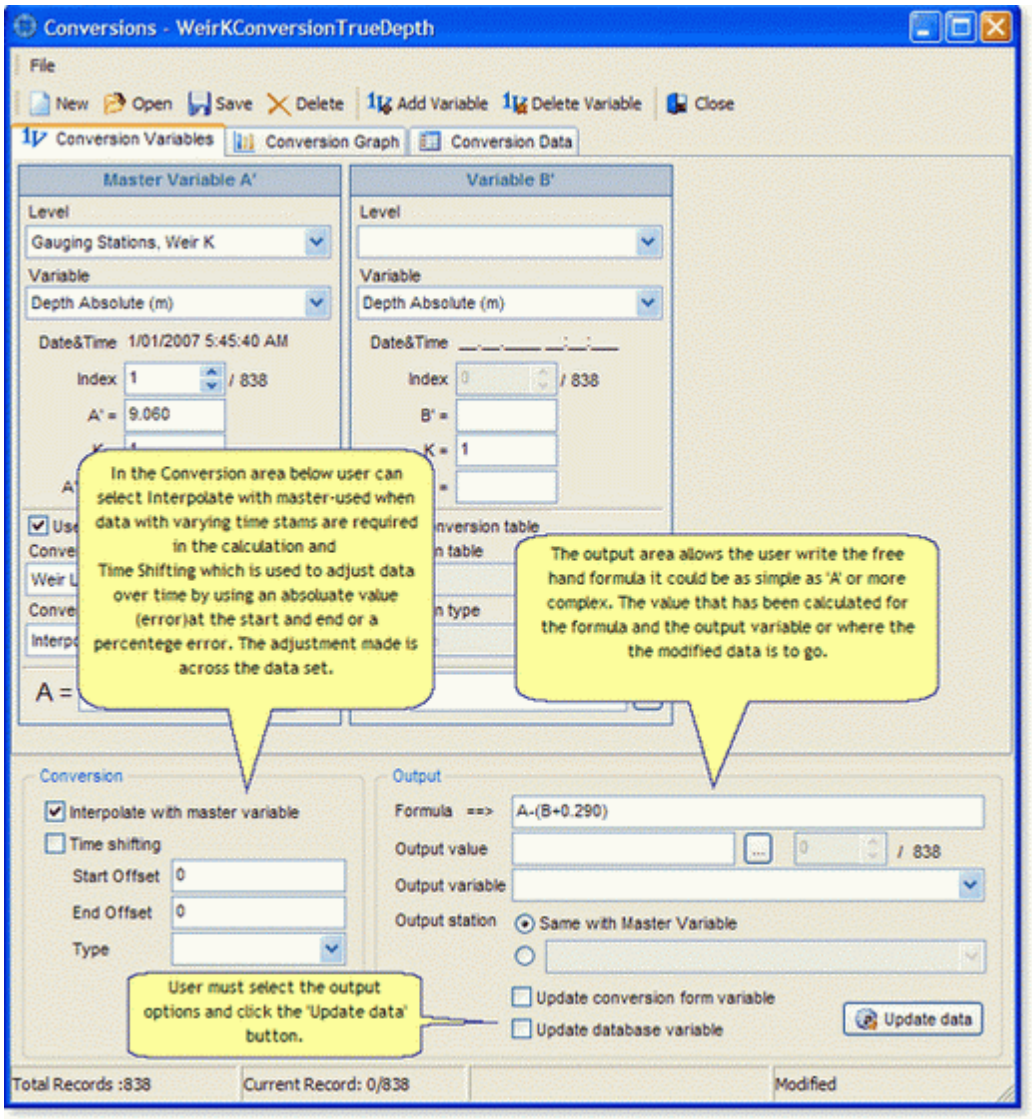
Conversions - WeirKConversionTrueDepth
File
New
Open
Save
Delete
Add Variable
Delete Variable
Close
Conversion Variables
Conversion Graph
Conversion Data
Master Variable A'
Variable B'
Level
Gauging Stations, Weir K
Variable
Depth Absolute (m)
Date&Time 1/01/2007 5:45:40 AM
Index 1 / 838
A' = 9.060
B' =
K = 1
In the Conversion area below user can select Interpolate with master-used when data with varying time stams are required in the calculation and
Time Shifting which is used to adjust data over time by using an absoluate value (error)at the start and end or a percentege error. The adjustment made is across the data set.
The output area allows the user write the free hand formula it could be as simple as 'A' or more complex. The value that has been calculated for the formula and the output variable or where the the modified data is to go.
Conversion
Interpolate with master variable
Time shifting
Start Offset 0
End Offset 0
Type
Output
Formula ==> A-(B+0.290)
Output value
Output variable
Output station
Same with Master Variable
Update conversion form variable
Update database variable
Update data
User must select the output options and click the 'Update data' button.
Total Records :838
Current Record: 0/838
Modified

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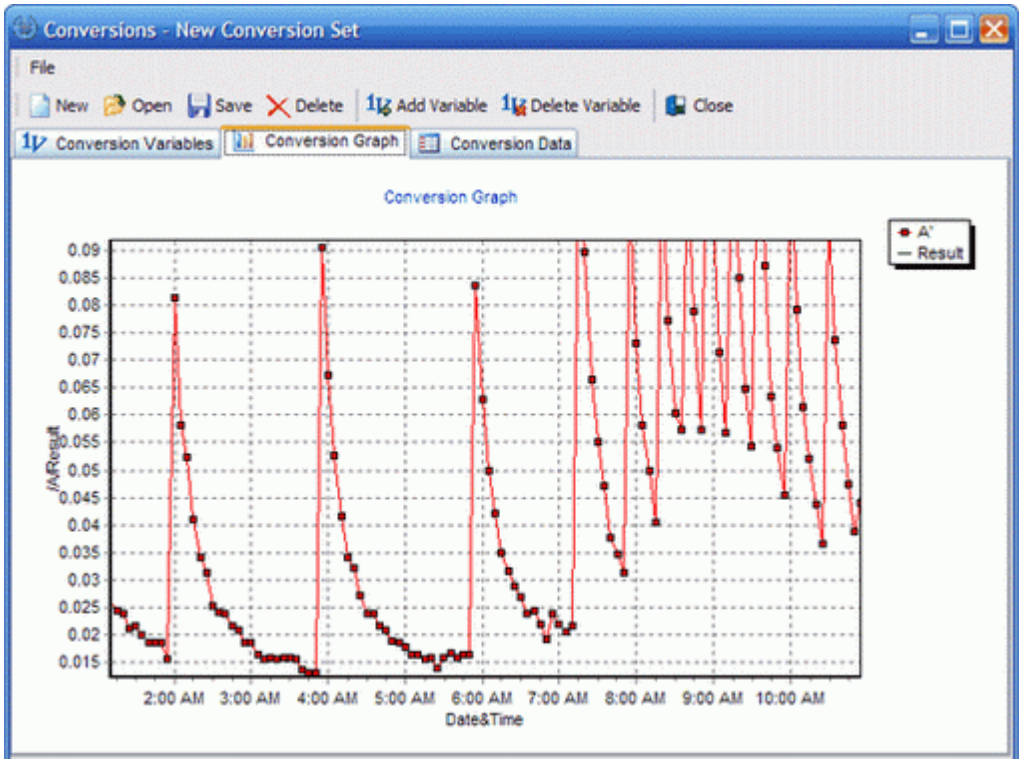
Conversion Graph

The Conversion Graph displays both the raw data and the converted data. This can provide the user with an opportunity to complete an initial review. By right clicking on the graph the user can access all of the standard DataSight graphing features found in the main program. This includes exporting the graph via email or saving to a file.



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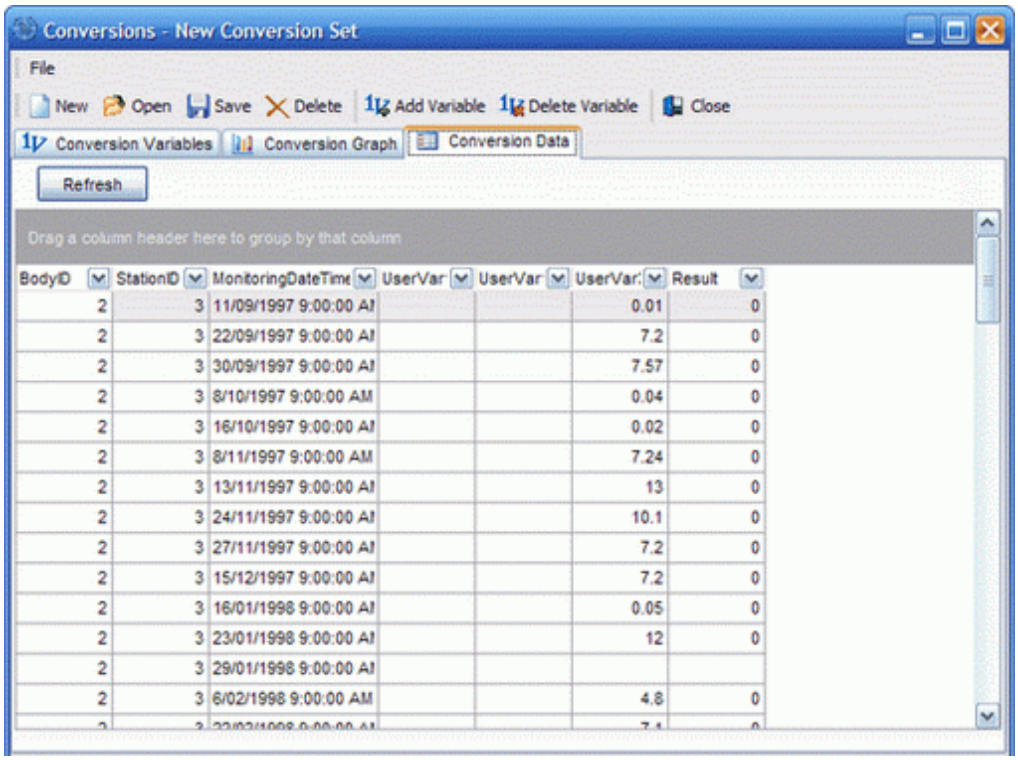
Conversion Data

The Conversion Data displays the both the raw and the calculated data. This is only available after the conversion has been undertaken.



BodyID	StationID	MonitoringDateTime	UserVar	UserVar	UserVar	Result
2	3	11/09/1997 9:00:00 AM			0.01	0
2	3	22/09/1997 9:00:00 AM			7.2	0
2	3	30/09/1997 9:00:00 AM			7.57	0
2	3	8/10/1997 9:00:00 AM			0.04	0
2	3	16/10/1997 9:00:00 AM			0.02	0
2	3	8/11/1997 9:00:00 AM			7.24	0
2	3	13/11/1997 9:00:00 AM			13	0
2	3	24/11/1997 9:00:00 AM			10.1	0
2	3	27/11/1997 9:00:00 AM			7.2	0
2	3	15/12/1997 9:00:00 AM			7.2	0
2	3	16/01/1998 9:00:00 AM			0.05	0
2	3	23/01/1998 9:00:00 AM			12	0
2	3	29/01/1998 9:00:00 AM				
2	3	6/02/1998 9:00:00 AM			4.8	0

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16.3 Using the Conversion Tool

Using the Conversion Tool

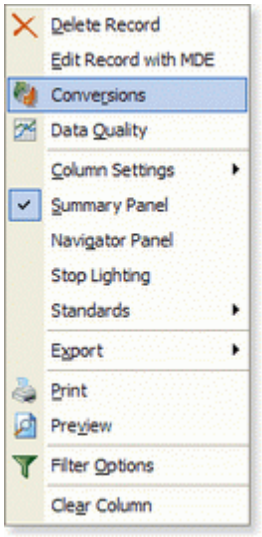
DataSight Conversion tool is a free hand calculation tool for the manipulation and calculation of data.

Before progressing please read the "Conversion Tool Overview"

If you have used DataSight you will be familiar with the required fields within the calculation tool.

The first step in using the tool is to use DataSight to filter and display the data that you wish to use in the calculations. The data **MUST** be displayed in the DataSight Datasheet. It is possible to have several stations displayed in the Datasheet so they are all available for calculations.

Once you have filtered your data, to access the Conversions right click within the DataSight Datasheet and select **Conversions**.



The following Icons are found at the top of the Conversions screen.

If you select **Open** the screen "Conversion Sets" will open so you can select a saved Conversion Set.

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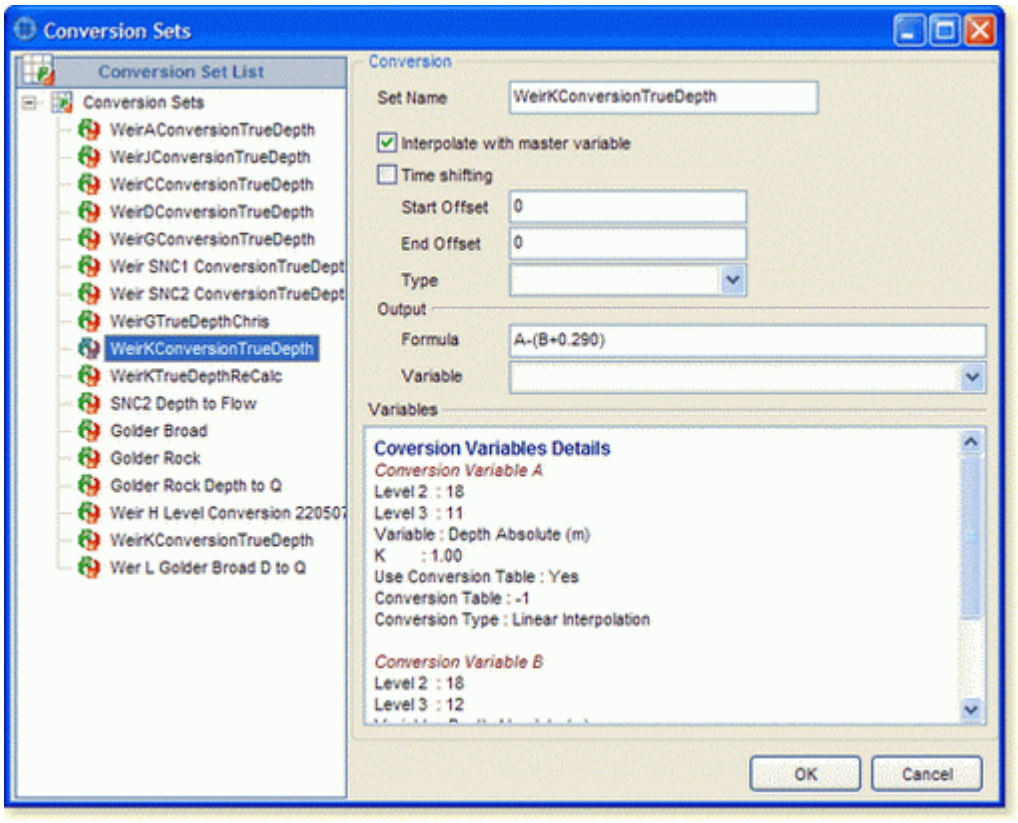
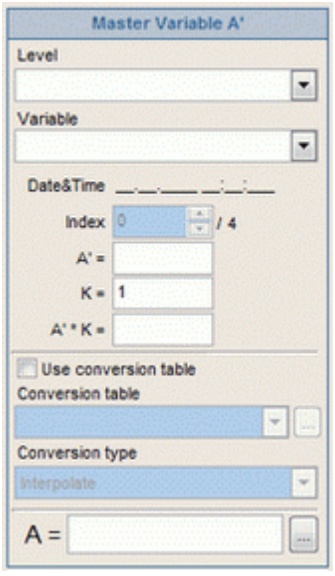


Once you have your Datasheet displayed you can then populate the fields within the Conversion Tool. If you require more than one variable, select **Add Variable** at the top of the Conversions screen.

Variables



Users must select specific **Level** and **Variable** information for the Variables which have been added for use in the conversion / calculation.

Time Shifting

Time Shifting can be used when an error is found in the data. For example on installation a sensor may have no error. However, after 6 months deployment there may be a 10% error in the sensor's measurements. By using **Time Shifting**, selecting the Start and End Offset amount/percentage, the

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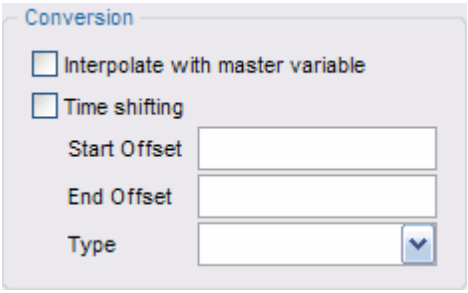
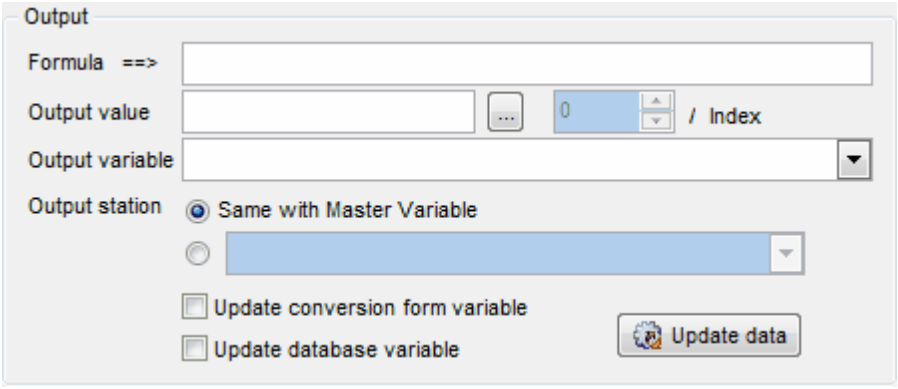
user can adjust the data proportionally over time. It is important to note that Time Shifting assumes that the error is linear and undertakes the calculations using this assumption.



Formula & Output



The Output area allows a formula to be entered and an output variable to be selected and updated.

Update conversion form variable: the output is within the conversion tool. This allows the user to simply update and store the output within the conversion tool, so as not to change any of the database variables. This also allows conversions to be completed on the output variable selected and not change any data within the database.
Update database variable: the output is to the database. This allows the user to update and store the output in the selected output variable in the database.

To demonstrate the areas of the Conversion Tool window several example calculations are carried out below.

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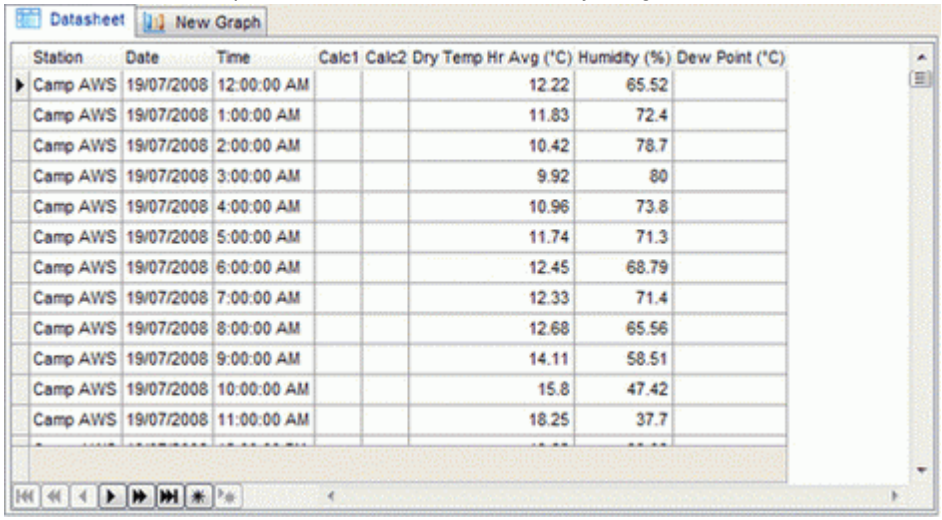
16.3.1 Completing a Conversion 1

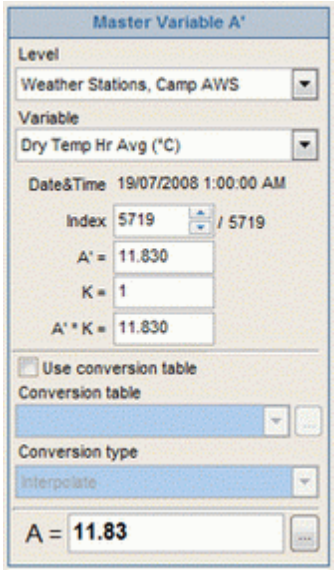
Example 1: Calculating Dew Point Temperature
If the user wanted to calculate *Dew Point* Temperature, using the variables *Temperature* and *Relative Humidity*:

1. Ensure the variables required for the calculation are currently being viewed within the Datasheet.



Station	Date	Time	Calc1	Calc2	Dry Temp Hr Avg (°C)	Humidity (%)	Dew Point (°C)
Camp AWS	19/07/2008	12:00:00 AM			12.22	65.52	
Camp AWS	19/07/2008	1:00:00 AM			11.83	72.4	
Camp AWS	19/07/2008	2:00:00 AM			10.42	78.7	
Camp AWS	19/07/2008	3:00:00 AM			9.92	80	
Camp AWS	19/07/2008	4:00:00 AM			10.96	73.8	
Camp AWS	19/07/2008	5:00:00 AM			11.74	71.3	
Camp AWS	19/07/2008	6:00:00 AM			12.45	68.79	
Camp AWS	19/07/2008	7:00:00 AM			12.33	71.4	
Camp AWS	19/07/2008	8:00:00 AM			12.68	65.56	
Camp AWS	19/07/2008	9:00:00 AM			14.11	58.51	
Camp AWS	19/07/2008	10:00:00 AM			15.8	47.42	
Camp AWS	19/07/2008	11:00:00 AM			18.25	37.7	

2. Right-click on the datasheet and open the **Conversion** window.
3. Select Master Variable A (Temperature) by selecting the Level and Variable from the populated drop-down lists.



4. Add a second Variable by selecting **Add Variable** in the toolbar.

5. Select Variable B (Relative Humidity).

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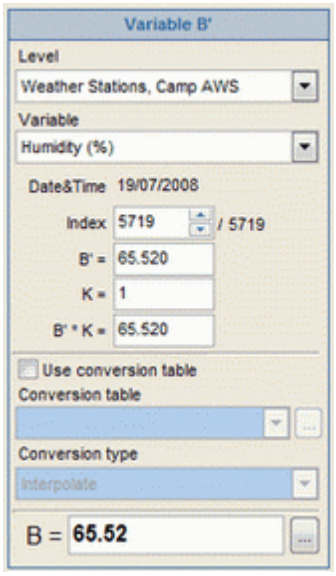
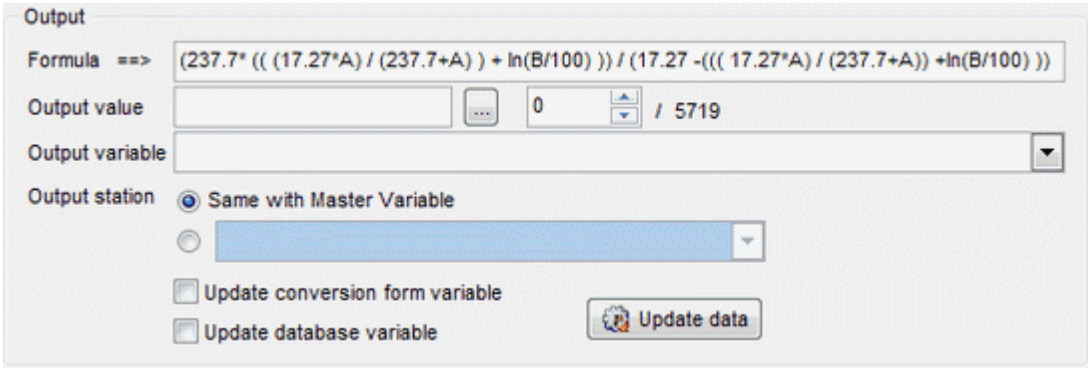


6. Below the **Output** area of the Conversion window enter the **Formula** required to complete the calculation.



7. Select the **Output variable**

8. The user can then select either Update conversion form variable or Update database variable checkbox to complete the calculation.
   Options
   Update conversion form variable: the output is within the conversion tool. This allows the user to simply update and store the output within the conversion tool, so as not to change any of the database variables. This also allows conversions to be completed on the output variable (created in Step 7) and not change any data within the database.
   Update database variable: the output is to the database. This allows the user to update and store the output in the database variable selected in Step 7.

9. Once the user has selected from these options, simply press the

button.

10. A Conversion Log summary will be displayed (and saved to the Audit Trail Log) and the conversion completed when **OK** is pressed.

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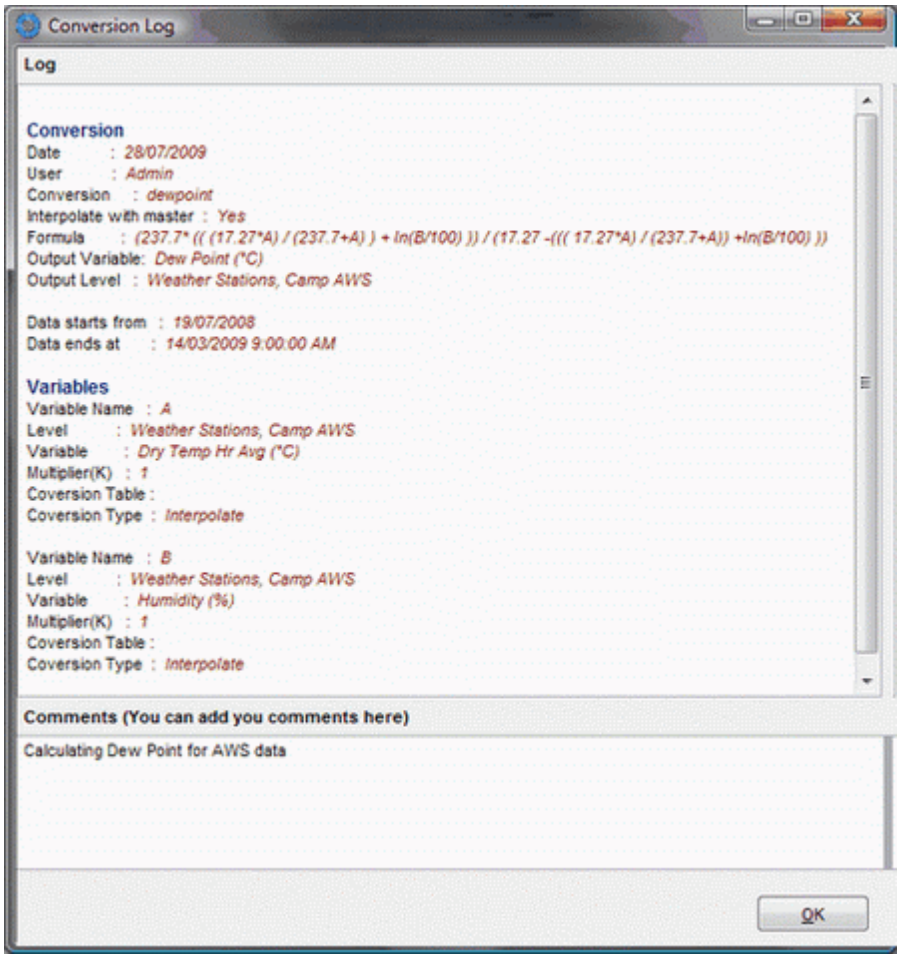
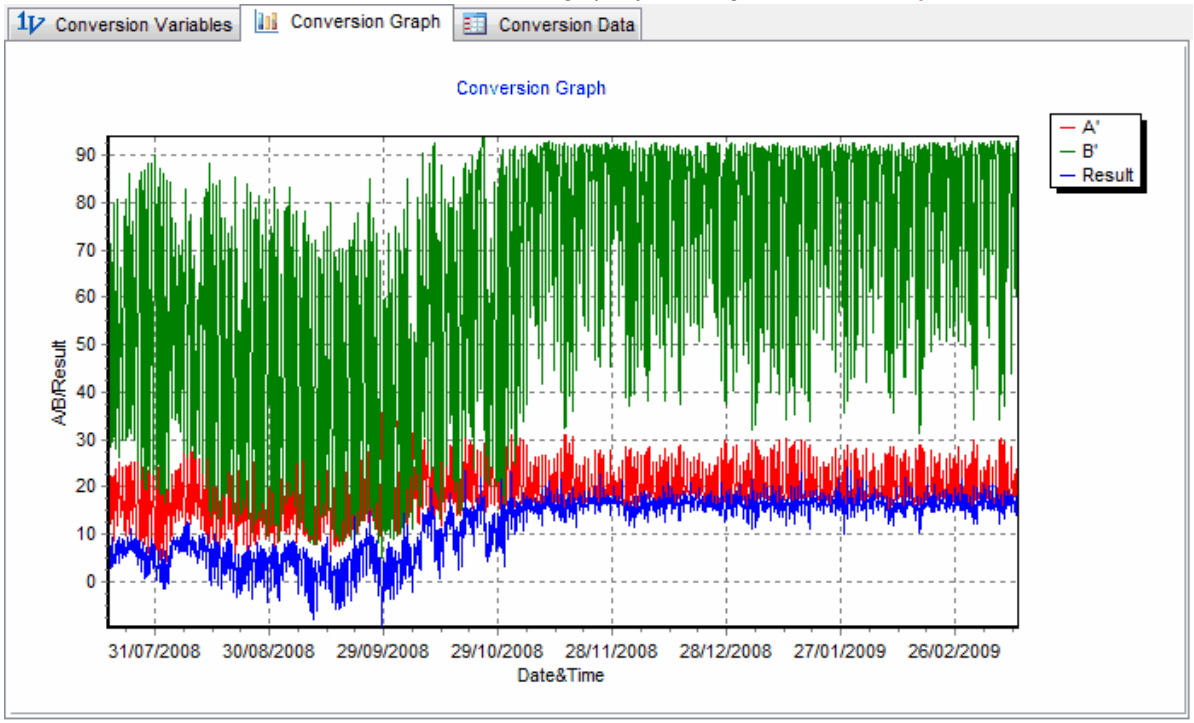

Conversion Log
Log
Conversion
Date : 28/07/2009
User : Admin
Conversion : dewpoint
Interpolate with master : Yes
Formula : (237.7* (((17.27*A) / (237.7+A)) + ln(B/100))) / (17.27 -(((17.27*A) / (237.7+A)) +ln(B/100)))
Output Variable: Dew Point (°C)
Output Level : Weather Stations, Camp AWS
Data starts from : 19/07/2008
Data ends at : 14/03/2009 9:00:00 AM
Variables
Variable Name : A
Level : Weather Stations, Camp AWS
Variable : Dry Temp Hr Avg (°C)
Multiplier(K) : 1
Coversion Table :
Coversion Type : Interpolate
Variable Name : B
Level : Weather Stations, Camp AWS
Variable : Humidity (%)
Multiplier(K) : 1
Coversion Table :
Coversion Type : Interpolate
Comments (You can add you comments here)
Calculating Dew Point for AWS data
OK

11. The user can also view the result of the calculation as a graph by selecting **Conversion Graph** tab.



The image above displays the Conversion Graph.
Plotted on the graph are Variables A and B and the Result of the formula entered.

As with the graphs created in other areas of DataSight, users can save and export the graph (and data) and zoom in

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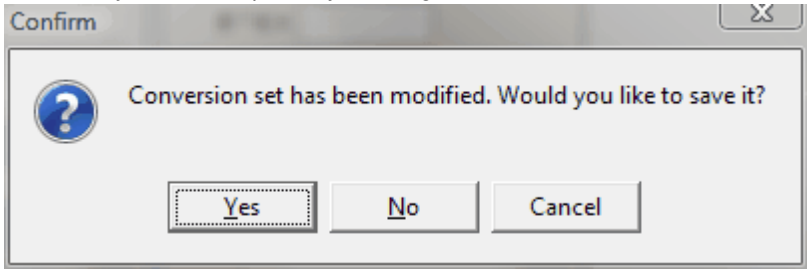
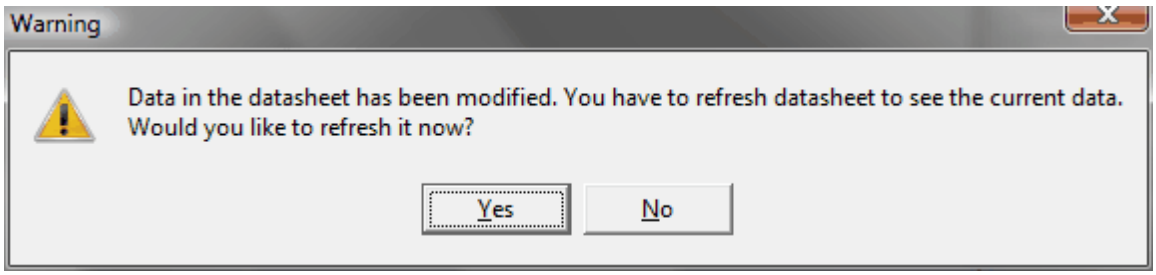
and examine the graph more closely within the conversion window.

12. Press the **Close** button when you wish to view the output data. You can then elect to either save or discard the conversion you have completed by selecting **Yes** or **No**.



Note that this simply saves the Conversion Tool window variable/s and formula. You do not need to save to complete the conversion.

13. Select **Yes** to refresh the datasheet and view the newly calculated data.


Warning
Data in the datasheet has been modified. You have to refresh datasheet to see the current data.
Would you like to refresh it now?
Yes
No

The Dew Point (°C) variable has been populated within the datasheet.

Station	Date	Time	Calc1	Calc2	Dry Temp Hr Avg (°C)	Humidity (%)	Dew Point (°C)
Camp AWS	19/07/2008	12:00:00 AM			12.22	65.52	5.9482
Camp AWS	19/07/2008	1:00:00 AM			11.83	72.4	7.0256
Camp AWS	19/07/2008	2:00:00 AM			10.42	78.7	6.8791
Camp AWS	19/07/2008	3:00:00 AM			9.92	80	6.6313
Camp AWS	19/07/2008	4:00:00 AM			10.96	73.8	6.4666
Camp AWS	19/07/2008	5:00:00 AM			11.74	71.3	6.7161
Camp AWS	19/07/2008	6:00:00 AM			12.45	68.79	6.8744
Camp AWS	19/07/2008	7:00:00 AM			12.33	71.4	7.3030
Camp AWS	19/07/2008	8:00:00 AM			12.68	65.56	6.3942
Camp AWS	19/07/2008	9:00:00 AM			14.11	58.51	6.0947
Camp AWS	19/07/2008	10:00:00 AM			15.8	47.42	4.6344
Camp AWS	19/07/2008	11:00:00 AM			18.25	37.7	3.5750
Camp AWS	19/07/2008	12:00:00 PM			19.82	33.06	3.1001
Camp AWS	19/07/2008	1:00:00 PM			21.1	29.74	2.7195
Camp AWS	19/07/2008	2:00:00 PM			21.99	29.06	3.1600
Camp AWS	19/07/2008	3:00:00 PM			21.77	28.46	2.6768
Camp AWS	19/07/2008	4:00:00 PM			22.15	30.96	4.1971
Camp AWS	19/07/2008	5:00:00 PM			21.81	29.57	3.2510

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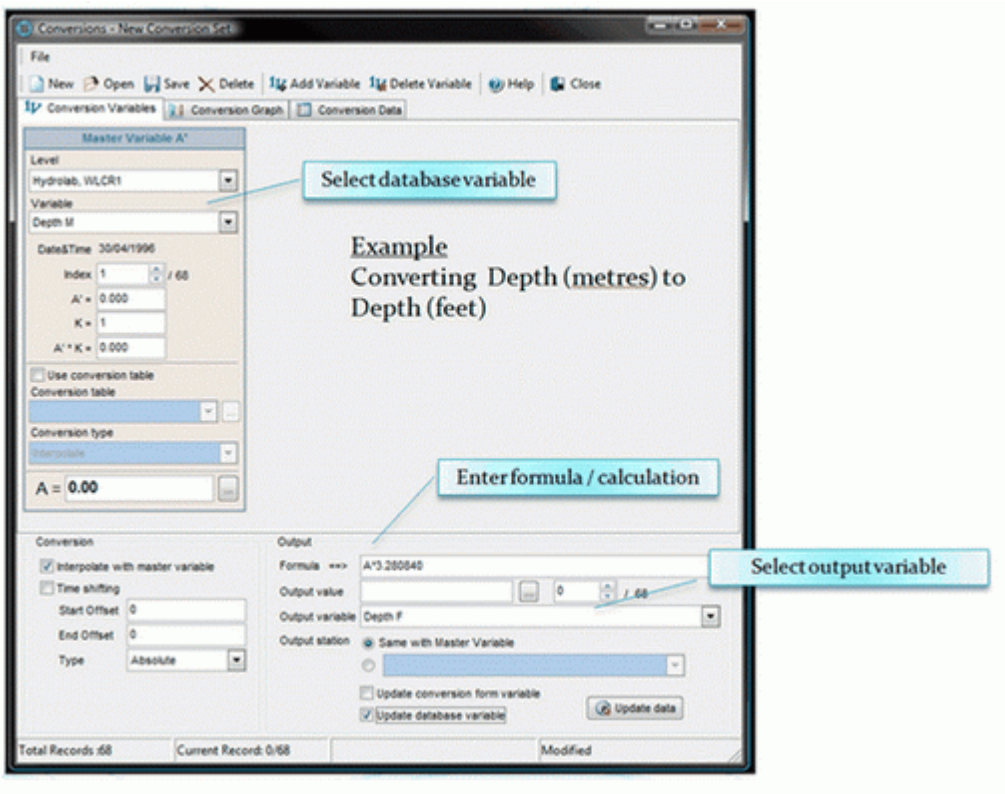
16.3.2 Completing a Conversion 2

Example 2: A simple calculation.

The following example illustrates a simple multiplication, completed within the Conversion Tool.



Select the **Conversion Graph** tab to view the result of the calculation.

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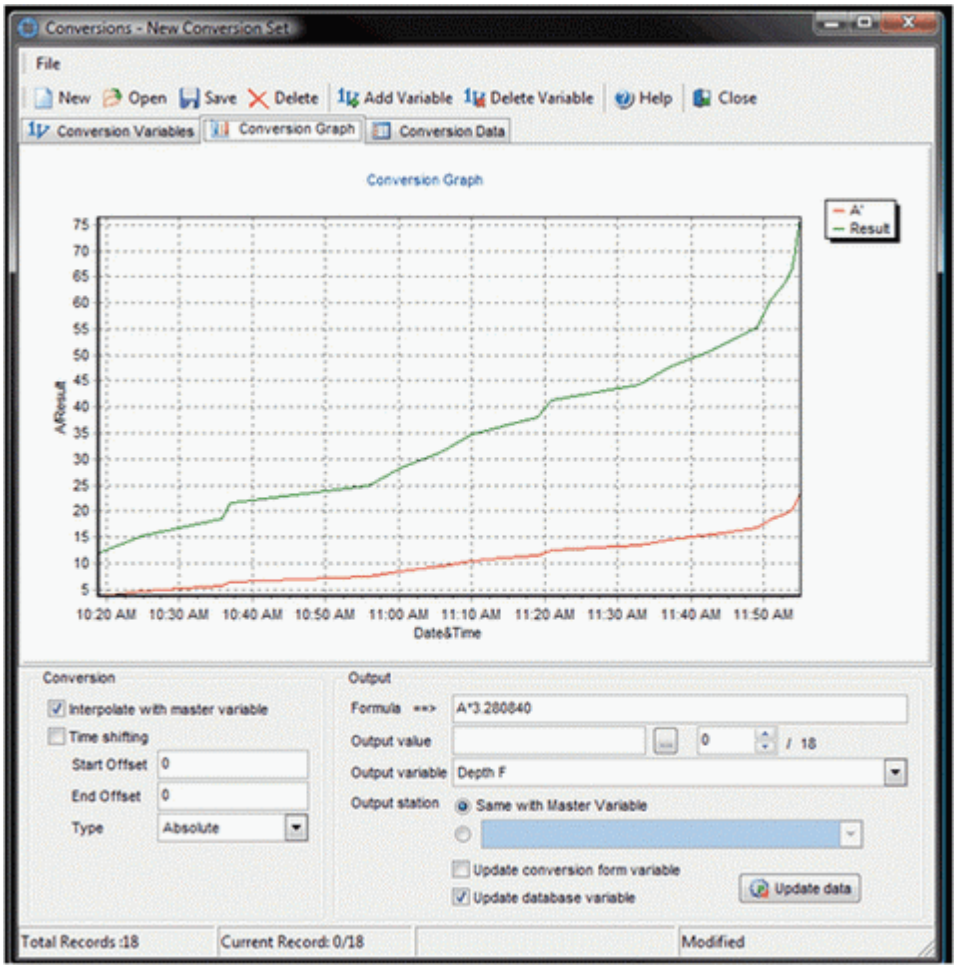

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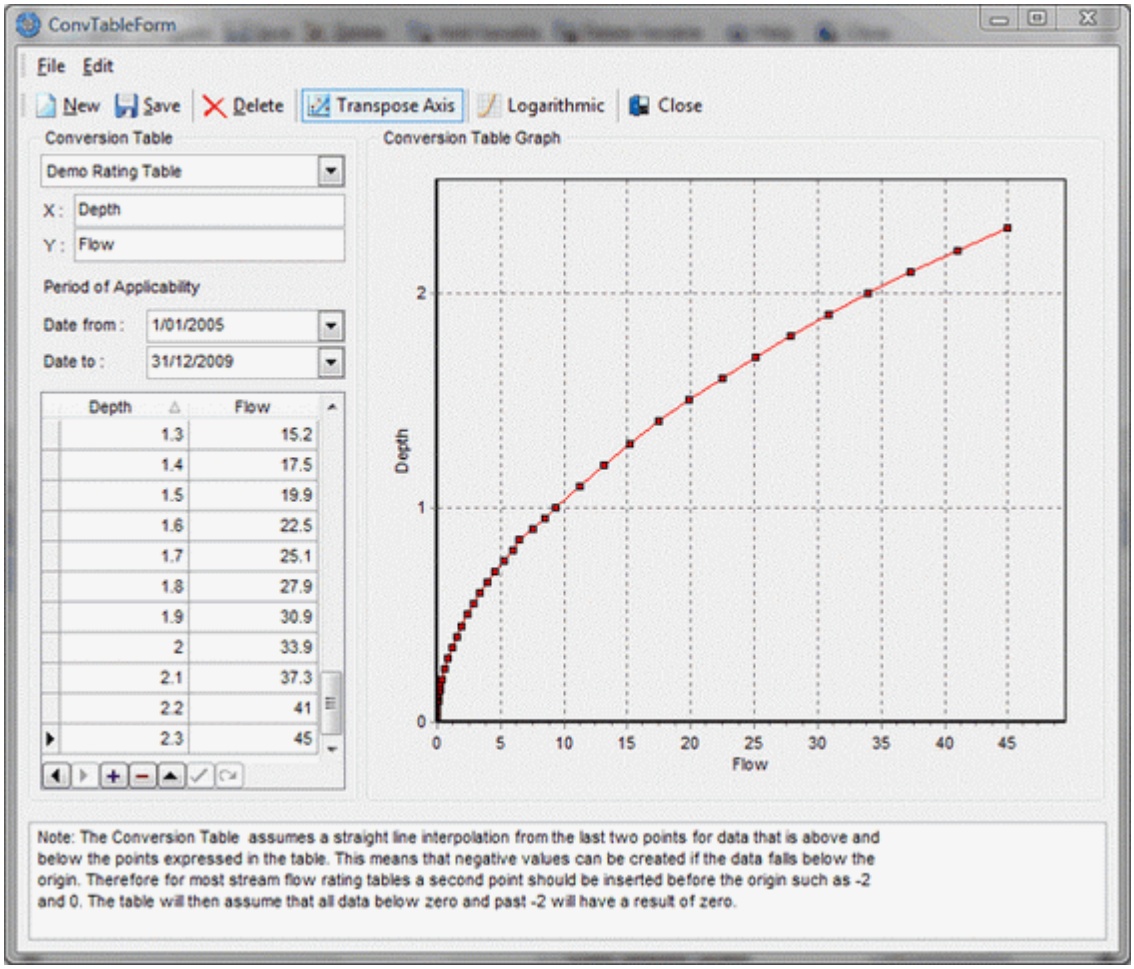
16.3.3 Completing a Conversion 3

Conversion Tables

To calculate stream flow from depth measurements ensure you have the correct rating table with depth and discharge data.

Rating tables can be entered into DataSight in the Conversion Tool. Select **File**, **Conversion Tables**.

An example of a rating table is shown below, followed by an example streamflow calculation using the rating table.


ConvTableForm
File Edit
New Save Delete Transpose Axis Logarithmic Close
Conversion Table
Demo Rating Table
X: Depth
Y: Flow
Period of Applicability
Date from: 1/01/2005
Date to: 31/12/2009
Depth Flow
1.3 15.2
1.4 17.5
1.5 19.9
1.6 22.5
1.7 25.1
1.8 27.9
1.9 30.9
2 33.9
2.1 37.3
2.2 41
2.3 45
Conversion Table Graph
Depth
Flow
0 1 2
0 5 10 15 20 25 30 35 40 45
Note: The Conversion Table assumes a straight line interpolation from the last two points for data that is above and below the points expressed in the table. This means that negative values can be created if the data falls below the origin. Therefore for most stream flow rating tables a second point should be inserted before the origin such as -2 and 0. The table will then assume that all data below zero and past -2 will have a result of zero.

Example 3: Converting Depth to Flow using a Conversion Table.

1. Ensure you are viewing the data you wish to work with in the Datasheet window. Right-click and select **Conversions**.
2. In the Conversions window select the appropriate **Level** and **Variable** for Master Variable A (these should be the depth measurement location and depth.

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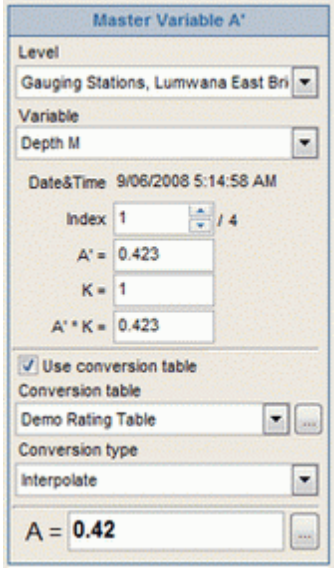
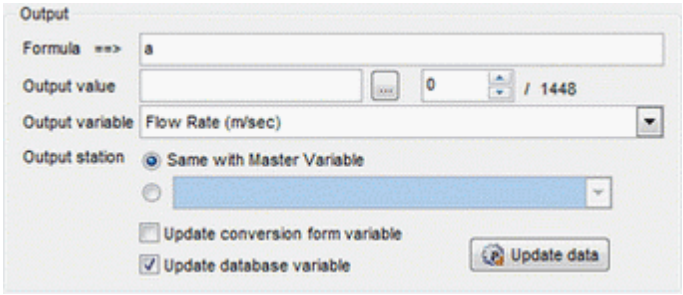
Ensure you also check the **Use conversion table** box.

3. Select the appropriate Conversion table from the drop-down list.



4. When completing conversions using a Conversion table, the Formula entered can simply be *A* (or *a*).



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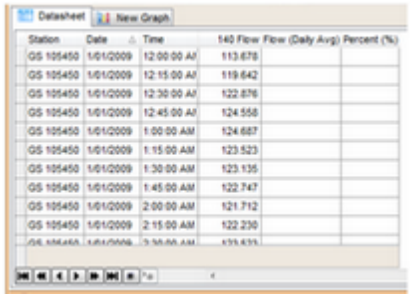
16.3.4 Completing a Conversion 4

Flow Duration Curves

To establish representative low flows and floods (high flows) for a river course a hydrologist will analyse the frequency of daily flows in the form of a flow duration curve. A flow duration curve is a plot of discharge vs. amount of time that a certain discharge was exceeded. For most studies the data needed for this analysis is the daily average flow (the average discharge or flow for each day), hence this is used in this example.

Within the Datasheet, ensure you are viewing the variables required for the calculation:
Flow and two variables to output Daily Average Flow and Percent of time exceeded.



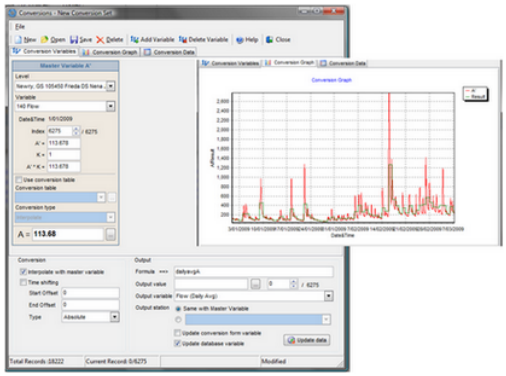
To calculate the Daily average flow
- Open the conversion tool

- Select Master Variable A (*140 Flow*)

- Enter the formula *dailyavgA*

- Select the output variable (*Daily Avg Flow*)

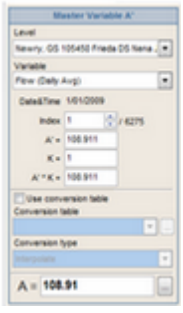
- Check the *Update database variable* box and the *Update conversion form variable box* and click Update data.



Once the conversion has run you will have the *Daily Average Flow* for the river and you can **calculate the Percent of time exceeded**.
- Within the conversion tool select the *Daily Average Flow* variable you have just populated with the previous calculation
- Enter the following formula (RankDSCA/(n + 1))*100

RankDSC is used in the formula to sort (rank) the average daily discharges for the period of record from the largest value to the smallest value, involving a total of n values, where *n* equals the number of points or events for the period of flow records being analysed.

So, in our example, there are 6275 flow points in the period, and this is displayed in the conversion tool window.



So, the formula to be entered is (RankDSCA/(6275+1))*100

- Select an output variable (for example, *Percent*)

- Check the *Update database variable* box

- Click Update data.

Close the conversion tool window, ensuring you *refresh the datasheet* to see the current data.

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Creating the Flow Duration Curve

Using your calculated data you can now create a Flow Duration Curve
- Click the **New Graph** tab
- Place the *Percent exceeded* variable on to the x-axis
- Place the *Daily Average Flow* variable on the y-axis

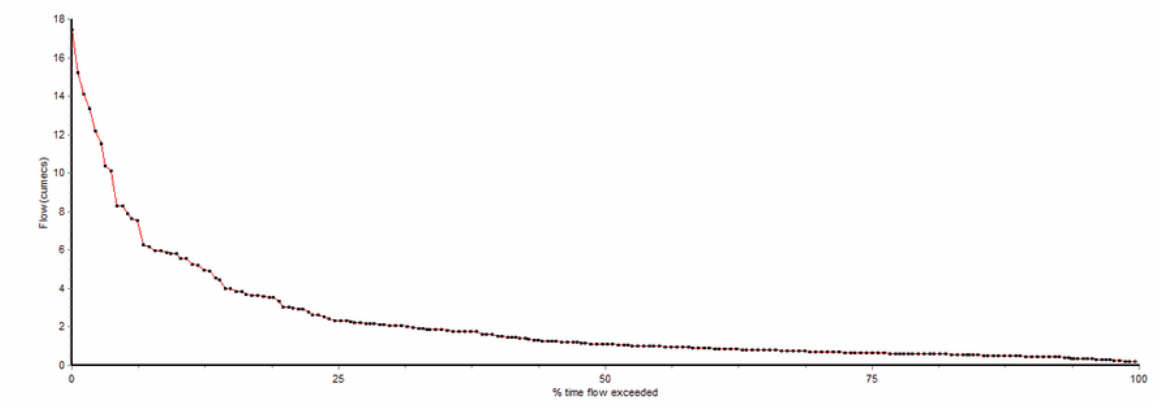

Figure 1.1 Flow duration curve for the East Creek (2008-09 data).

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16.4 Conversion Formulas

DataSight Conversion Tool gives you the opportunity to do complex conversions. The formula area is one of the most important pieces of the Conversion Tool. You can write simple or complex formulas and calculations and any formula you enter in to the formula box is parsed against errors before you do the calculation.

Consider the details below while you are working with the Conversion Tool.

- Each DataSight variable added into the Conversion Tool is represented with corresponding variable (letter) in the formula. The first variable is a Master variable and named by 'A', additional variables are named 'B', 'C', etc.

Conversion Variable	Formula Representation
Master Variable A	A or a
Variable B	B or b
Variable C	C or c
...	
Variable Z	Z or z

Examples:

A

A+B

A*2.3+B

For example, If the user enters 'A' into the formula box, the conversion tool will return the value of Variable A as the result.

Datasight implemented variables

There are also some DataSight Implemented variables for use in the Formula area.

Formula Representation	Comment
MINA	Minimum Value of Master Variable A series
MAXA	Maximum Value of Master Variable A series
AVGA	Average Value of Master Variable A series
SUMA	Total Value of Master Variable A Series
DISCHARGEA	Total Discharge Value of Master Variable A series
MINB	Minimum Value of Variable B series
MAXB	Maximum Value of Variable B series
AVGB	Average Value of Variable B series
SUMB	Total Value of Variable B series
DISCHARGEB	Total Discharge Value of Variable B series
...	...

Further functions include calander usage, such as DAILYSUM, DAILYAVG, WEEKLYSUM, WEEKLYAVG, MONTHLYSUM, MONTHLYAVG, YEARLYSUM, YEARLYAVG.

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You need the add the corresponding letter for the variable to the end of these formulas for the conversion to complete, such as DAILYAVGA, WEEKLYSUMB, YEARLYAVGC, etc.

Formula Representation	Comment
DAILYSUMA	Daily Sumary (Total) Value of Master Variable A series
DAILYAVGA	Daily Average Value of Master Variable A series
...	...

Mathematical and Statistical Functions

Formula	Example Use
MEDIAN	Calculates the Median Value of the selected Variable series
VARIANCE	Calculates the Variance Value of the selected Variable series
STDEV	Calculates the Standard Deviation of the selected Variable series
CofV	Calculates the Co-efficient of Variation of the selected Variable series
RofC(x)	Calculates the per second Rate of Change from one data point to the next. For example, the formula **rofcA(3)** will calculate the per second rate of change for variable A over the previous three points. The formula **rofcA(3)*3600** calculates the hourly rate of change for variable A.

Calculating Differences

The Conversion Tool can be used to determine previous, next and time differences within the variables of a database.

Formula Variable	Comment
PVALA	Previous reading / value (of Variable A)
PVALB	Previous reading / value (of Variable B)
...	Previous reading / value (of Variable *n)*

Formula Variable	Comment
NVALA	Next reading / value (of Variable A)
NVALB	Next reading / value (of Variable B)
...	Previous reading / value (of Variable *n)*

Example 1: by using the **Previous Value** and **Next Value** in a formula a user can calculate differences between values.

Example 2: the NVAL conversion formula could be used to ensure correct functioning of the meter, such as looking at future (next or NVAL) values to see if a water meter is increasing in value as a flow increases.

Note: When PVAL is used for the first value within the dataset it will return that first value. Similarly, when NVAL is used

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for the final value in a set it will return that final value.

- The Conversion Tool can be used to calculate the time difference between records/values

Formula Variable	Comment
TIMEDIFFA	Time difference between records (in seconds)
TIMEDIFFB	...
...	

The TIMEDIFF variable will return the time difference between records/values.
For example if Record 1 was taken at '12/12/2008, 02:02:00' and Record 2 at '12/12/2008, 02:03:00' the value given would be 60 (seconds).

INDEX function

Formula	Example Use
INDEX	Displays the Index value of the output

The INDEX function can be used to index the selected variable - giving the first data entry in the series a value of 1, the next a value of 2, then 3 and so on. An example output is displayed below.

Station	Date	Time	Depth (m)	Index
Test	20/04/2010	9:00:00 AM	0.86	0
Test	20/04/2010	9:15:00 AM	1.45	1
Test	20/04/2010	9:30:00 AM	1.6	2
Test	20/04/2010	9:45:00 AM	2	3
Test	20/04/2010	10:00:00 AM	2.1	4
Test	20/04/2010	10:15:00 AM	2.32	5
Test	20/04/2010	10:30:00 AM	3	6
Test	20/04/2010	10:45:00 AM	3.42	7
Test	20/04/2010	11:00:00 AM	4.51	8
Test	20/04/2010	11:15:00 AM	5.08	9
Test	20/04/2010	11:30:00 AM	7.4	10

- Analytic Operators: +, -, /, *, ^
- Logical Operators: <, >, =, &, |, !, <>, <=, >=
- Paranthesis: (, {, [

- Common math functions are defined by default.

Full list of built in math functions.

Functions with single parameters.

SQR : Square function which can be used as SQR(X)

SIN : Sinus function which can be used as SIN(X), X is a real-type expression. Sin returns the sine of the angle X in radians.

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COS : Cosinus function which can be used as COS(X), X is a real-type expression. COS returns the cosine of the angle X in radians.

ATAN : ArcTangent function which can be used as ATAN(X)

SINH : Sinus Hyperbolic function which can be used as SINH(X)

COSH : Cosinus Hyperbolic function which can be used as COSH(X)

COTAN : which can be used as COTAN(X)

TAN : which can be used as TAN(X)

EXP : which can be used as EXP(X)

LN : natural log, which can be used as LN(X)

LOG : 10 based log, which can be used as LOG(X)

SQRT : which can be used as SQRT(X)

ABS : absolute value, which can be used as ABS(X)

SIGN : SIGN(X) returns -1 if X<0; +1 if X>0, 0 if X=0; it can be used as SQR(X)

TRUNC : Discards the fractional part of a number. e.g. TRUNC(-3.2) is -3, TRUNC(3.2) is 3.

CEIL : CEIL(-3.2) = 3, CEIL(3.2) = 4

FLOOR : FLOOR(-3.2) = -4, FLOOR(3.2) = 3

Functions that take two parameters are:

INTPOW : The INTPOW function raises Base to an integral power. INTPOW(2, 3) = 8.
Note that result of INTPOW(2, 3.4) = 8 as well.

POW : The Power function raises Base to any power.
For fractional exponents or exponents greater than MaxInt, Base must be greater than 0.

LOGN : The LogN function returns the log base N of X. Example: LOGN(10, 100) = 2

MIN : MIN(2, 3) is 2.

MAX : MAX(2, 3) is 3.

Functions that take more than 2 parameters are:

IF : IF(BOOL, X, Y) returns X if BOOL is <> 0, returns Y if BOOL =0.
Values of X and Y are calculated regardless of BOOL (Full Boolean Evaluation).

Formula Samples:

A-MINA

A+B+(AVGB-AVGB)

Parenthesis can be in the following formats (, {, [2*[LN(1+X) / LOG(1-X)]

[237.7* (((17.27*A) / (237.7+A)) + ln(B/100))) / (17.27 -(((17.27*A) / (237.7+A)) +ln (B/100))]

Functions, variables and constant values can be nested

SIN(3.14)+5^2+POW(2,MAX(X*2,Y))

IF(a,b,c) branching function are supported.

IF(X>0, 3/X, F(X))

Boolean operators are

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supported

Any non-zero value is TRUE,
0 is FALSE.

Scientific notation is supported: eg. **3E-2**

X+COSH(3E-2)

SIN(3.14)+5^2+POW(2,7)-MAX(10,20)

{ [SIN(A)^2] + COS(1) } * PI/2

(COSH(2.71)+ SINH(COS(0.5) * POW(0.2345, 0.67))) - LOG(1-A^2+A^5)

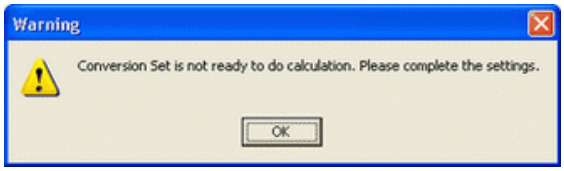
25993.894*EXP(-1.53389*(A-32))*POW(A, 0.13547)*POW(B, 0.38603)*EXP(-0.36222*B)

A+B+IF(A,A,B)

A-IF(A<>0,3*A,3)

IF(A>=B,A,B/2)

As mentioned, *the formula box is analysed for errors before the calculation is completed*. If you have any errors in the formula the conversion will not continue and you will receive the following warning.



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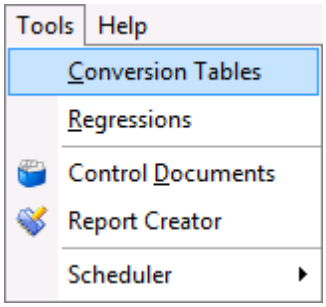
17 Conversion Tables

The following provides information on how to create and save a conversion look up table. These look up tables can contain data for

- Stream/River Stage Discharge Curves
- Water Quality data. For example, plotting Turbidity against Discharge
- Stream Rating Tables
- Pump Rating Tables

To create a Conversion Table access the Conversion Tables window via the **Tools** menu.



Conversion Tables are also accessible from the File menu within the Conversion Tool.

Create a New Table by clicking the New button on the Toolbar.

This allows the user to enter X and Y data in the area provided along with a **Period of Applicability** for each new conversion table.

For example, in this exercise we will create a *Water Quality* lookup table comparing observed Discharge and total suspended solids (TSS) for a stream.

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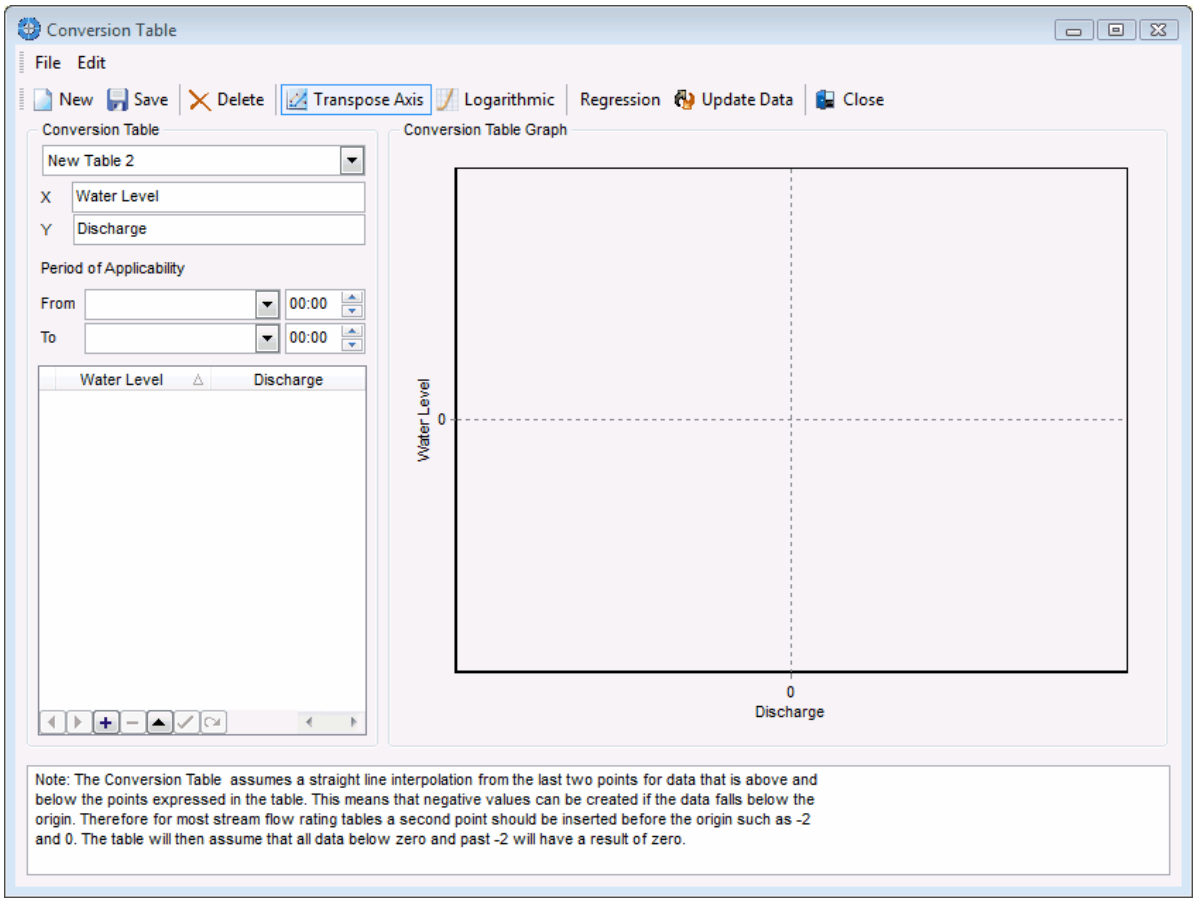
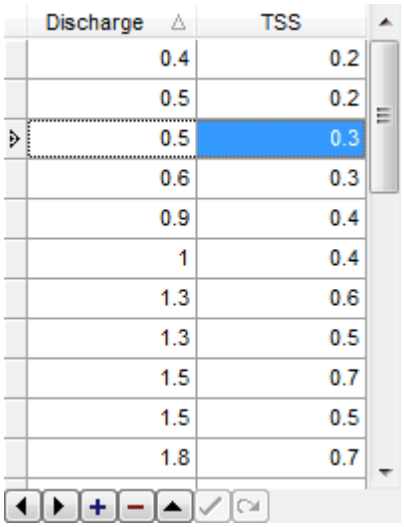

Conversion Table
File Edit
New Save Delete Transpose Axis Logarithmic Regression Update Data Close
Conversion Table
New Table 2
X Water Level
Y Discharge
Period of Applicability
From 00:00
To 00:00
Water Level Discharge
Conversion Table Graph
Water Level
0
0
Discharge
Note: The Conversion Table assumes a straight line interpolation from the last two points for data that is above and below the points expressed in the table. This means that negative values can be created if the data falls below the origin. Therefore for most stream flow rating tables a second point should be inserted before the origin such as -2 and 0. The table will then assume that all data below zero and past -2 will have a result of zero.

After entering the specific X and Y axis labels available data can be entered:

- Data can be entered individually using the navigation buttons at the bottom of the data area, selecting the + button to add a line and enter data, and the − button to remove a line of data.

- Column data can also be by copied from Excel (or a similar program) into the X and Y columns in the Conversion Table. So, if you have rating tables/look up tables in two columns in Excel, for example, you will be able to highlight, copy and paste them into this area.



Discharge	TSS
0.4	0.2
0.5	0.2
0.5	0.3
0.6	0.3
0.9	0.4
1	0.4
1.3	0.6
1.3	0.5
1.5	0.7
1.5	0.5
1.8	0.7

Similarly, if the user was to enter a rating table displaying depth/stage vs. discharge:

As data is entered it is graphed in the **Conversion Table Graph** area, as shown below.

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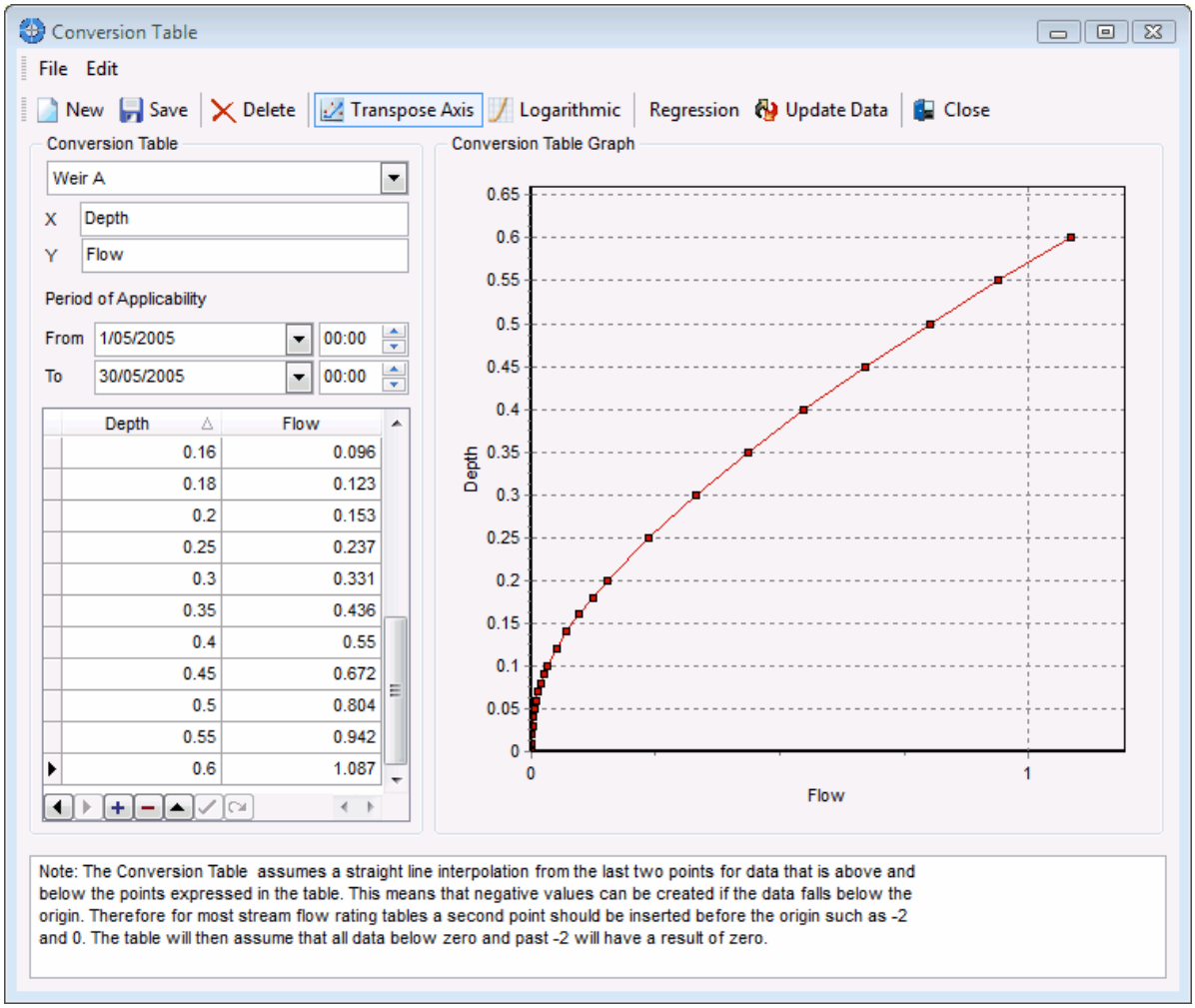
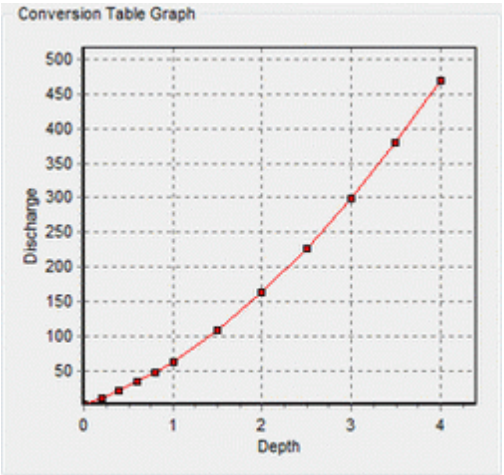
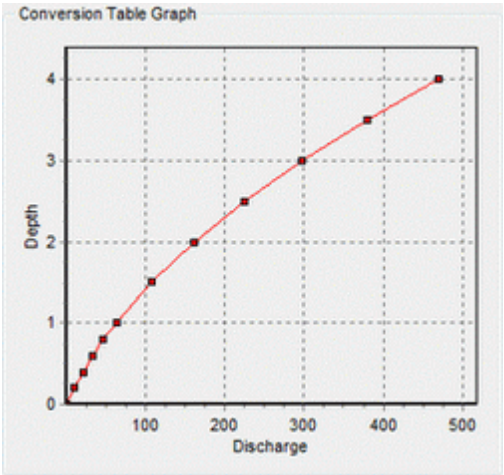

Conversion Table
File Edit
New Save Delete Transpose Axis Logarithmic Regression Update Data Close
Conversion Table
Weir A
X Depth
Y Flow
Period of Applicability
From 1/05/2005 00:00
To 30/05/2005 00:00
Depth Flow
0.16 0.096
0.18 0.123
0.2 0.153
0.25 0.237
0.3 0.331
0.35 0.436
0.4 0.55
0.45 0.672
0.5 0.804
0.55 0.942
0.6 1.087
Conversion Table Graph
Depth
Flow
Note: The Conversion Table assumes a straight line interpolation from the last two points for data that is above and below the points expressed in the table. This means that negative values can be created if the data falls below the origin. Therefore for most stream flow rating tables a second point should be inserted before the origin such as -2 and 0. The table will then assume that all data below zero and past -2 will have a result of zero.

To save the graph go to the File menu and select Save as.

As you can see in the images below, graph axis can be transposed by selecting Transpose Axis
(Note that this does not change or swap data stored in the X and Y columns, it simply changes the way they are displayed on the graph.)





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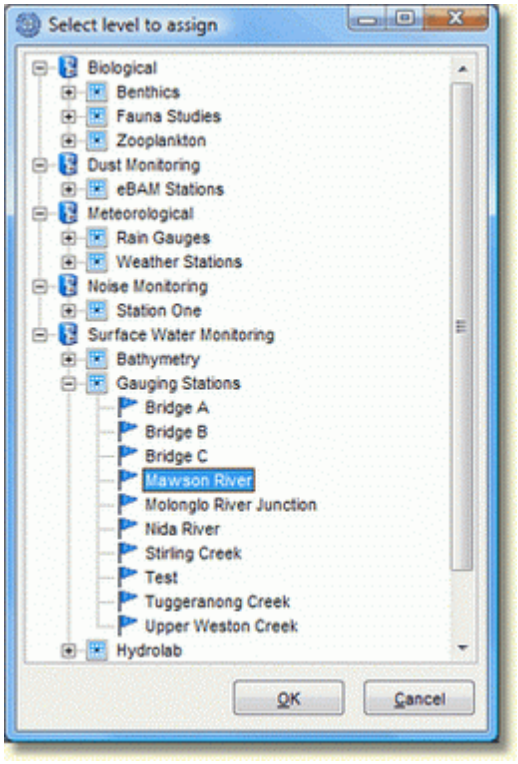
Selecting Logarithmic allows the user to set the graph scale to Logarithmic, which can be helpful when the data entered covers a large range of values.

Selecting Regression opens the Regression Tool, allowing regression analysis and the development of rating tables, tasks which are detailed in the following chapter.

Assign the Conversion Table to a Station

Once the Conversion Table has been created it can be **assigned to a station** (specific Level 1, Level 2, Level 3 location) so that it can be compared with stream gauging data (individual discharge measurements) and used for regression analysis.

1. Select *Assign to Station* from the **File** menu.
2. Within the Assign Levels window, click the **New** button.
3. Select the Station to assign the conversion table to, then select OK.



(Users can assign multiple stations to one Conversion Table by selecting New from within the Assign Levels window).

Updating existing data

Once the Conversion Table has been created and **assigned to a station** (specific Level 1, Level 2, Level 3 location) it can be applied to the existing data. **Period of Applicability** needs to be assigned to be able to update existing data.

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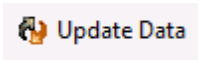
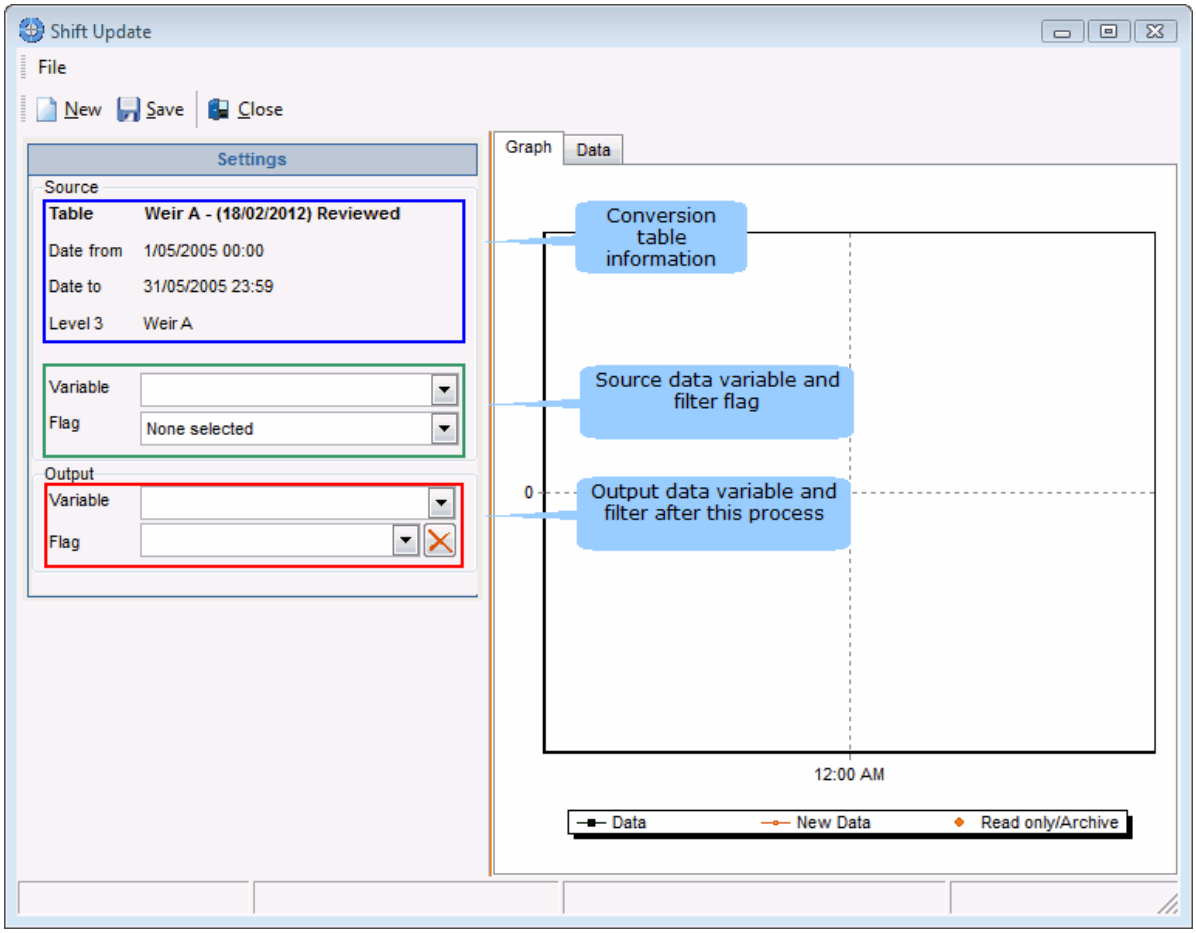
17.1 Applying Conversion Table to (Updating) Existing Data

Conversion Tables can be applied to existing data. Existing data can be raw or already converted.

Conversion Table needs to be **assigned to a station** (specific Level 1, Level 2, Level 3 location) and **Period of Applicability** needs to be assigned to be able to update existing data.

To open Update Form click 

button.



After selecting source variable and output variable DataSight automatically shows old and new data on the Graph. Data tab also shows the Source and before and after data in the datasheet to review.

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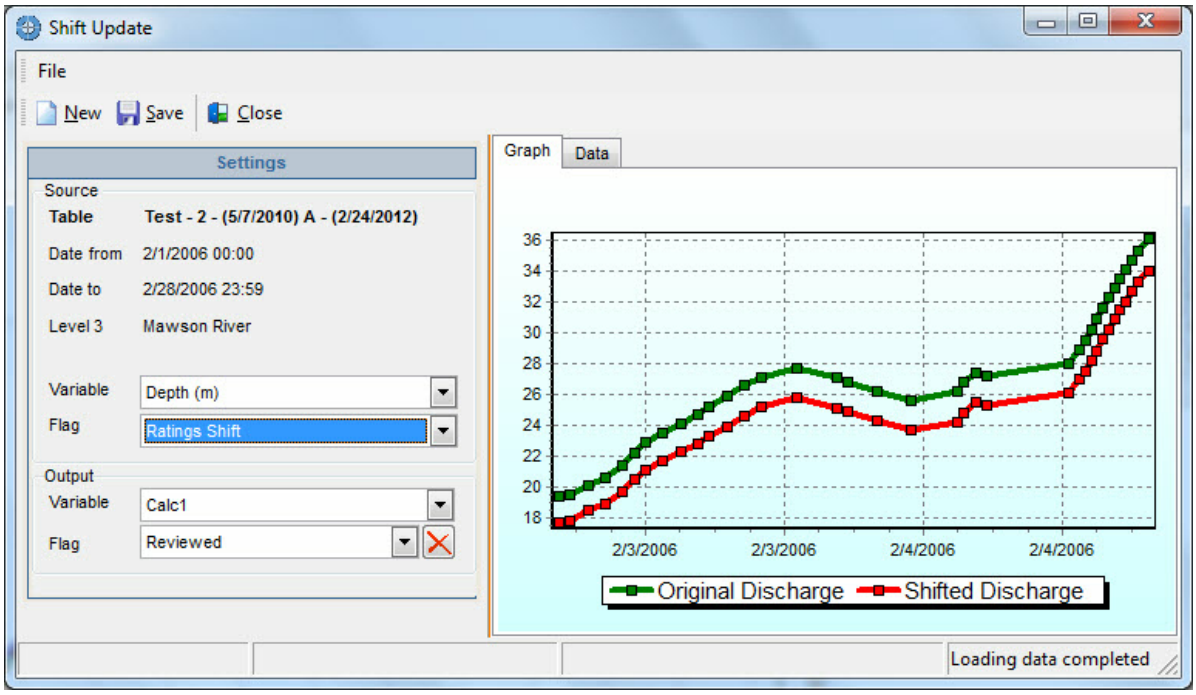
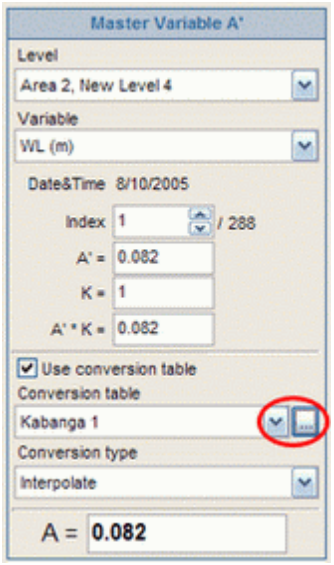


Click Save button to update existing data.

17.2 Using Conversion Tables

Conversion Tables can be used for interpolation within the DataSight Conversion Tool. They can also be used for regression analysis within the Regression Tool.

Within the Conversion Tool the user first needs to select the appropriate Conversion table from the list. The small box to the right provides access to the conversion table, allowing the user to view and edit the table.



Below this, **Conversion type** allows the user to select the type of interpolation between the selected variable and the conversion table.

- Interpolate - assumes a straight-line relationship and draws a straight line between the points in the table
- Step up method - Goes UP to the nearest point on the conversion/rating table to calculate the output.

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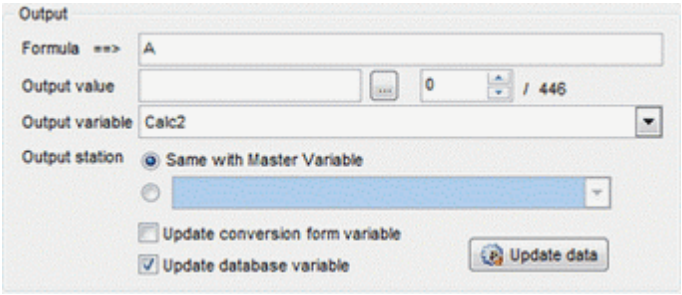
- Step down method - Goes DOWN to the nearest point on the conversion/rating table to calculate the output.
  The Step up / Step down methods can be used for situations where pump activation might initiate a pump that has only one speed. Therefore it is either on or off.

To complete the conversion a formula must be entered in the Output area.

In this example, **A** is the formula (referring to variable A - which will be interpolated against the conversion table) and **Calc2** is selected as the Output variable.



Selecting the Conversion Graph tab or the Conversion Data tab allows the user to view the graphical result and the data result, of the conversion before it is completed.

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18 Regression Tool

18.1 Regression Tool

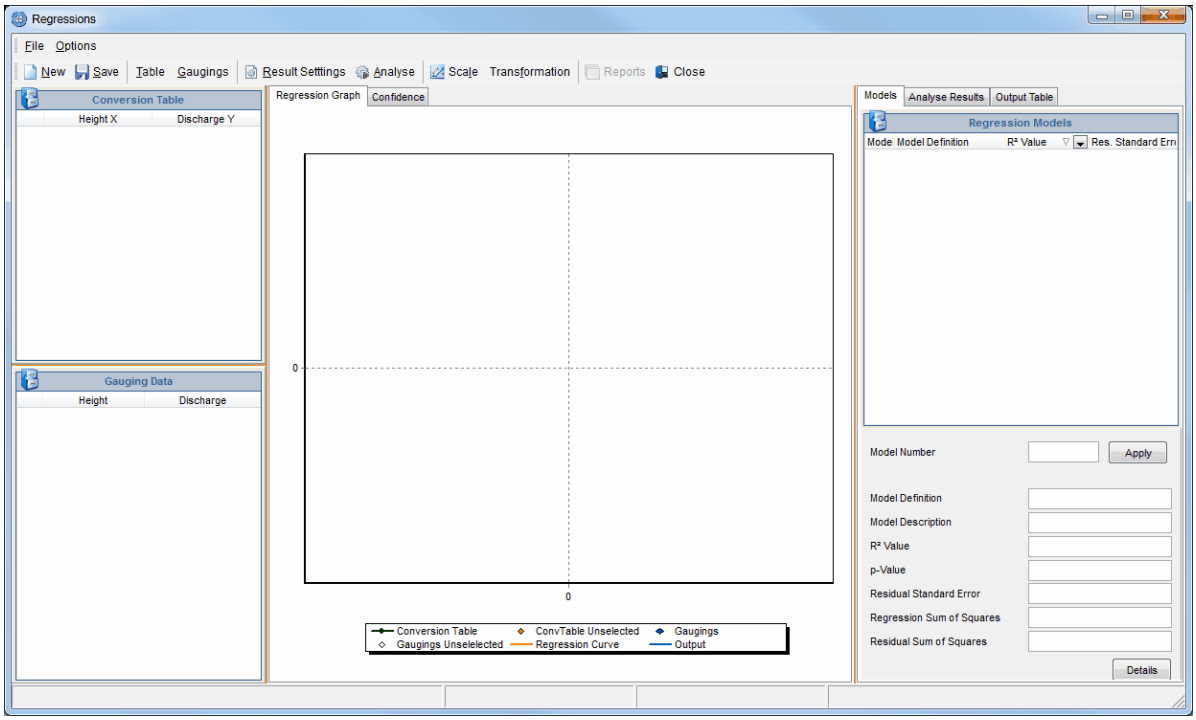
The Regression Tool allows the user to analyse the relationship between different variables and to fit statistical functions to a set of data in order to understand the relationship between the dependent and independent variable. It is accessible via the Tools menu.

18.2 Analysing Water Quality relationships using the Regression Tool

To perform regression analysis on two variables a conversion table must exist. The procedure for creating a Conversion Table is outlined in the previous chapter.

In this example, we will analyse a water quality table containing the variables *discharge* and *total suspended solids* (TSS).

1. Having created our conversion table with the existing data, open the Regression Tool.



2. Click the Table button to load the **Table List**, select the appropriate table and click **OK**.

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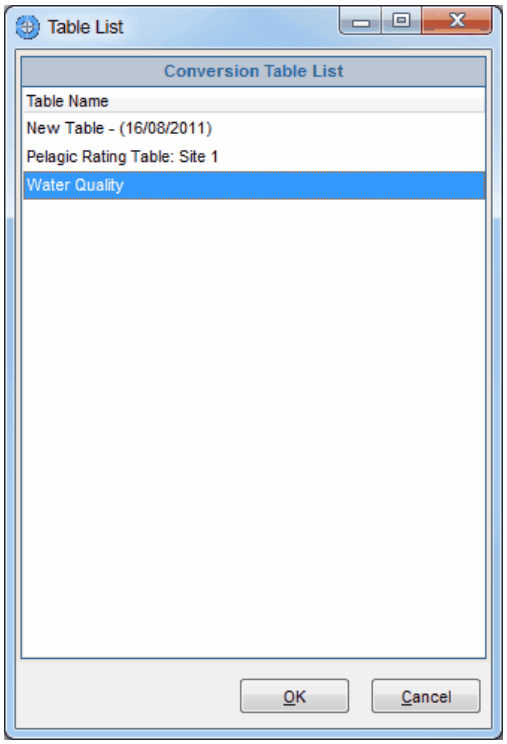
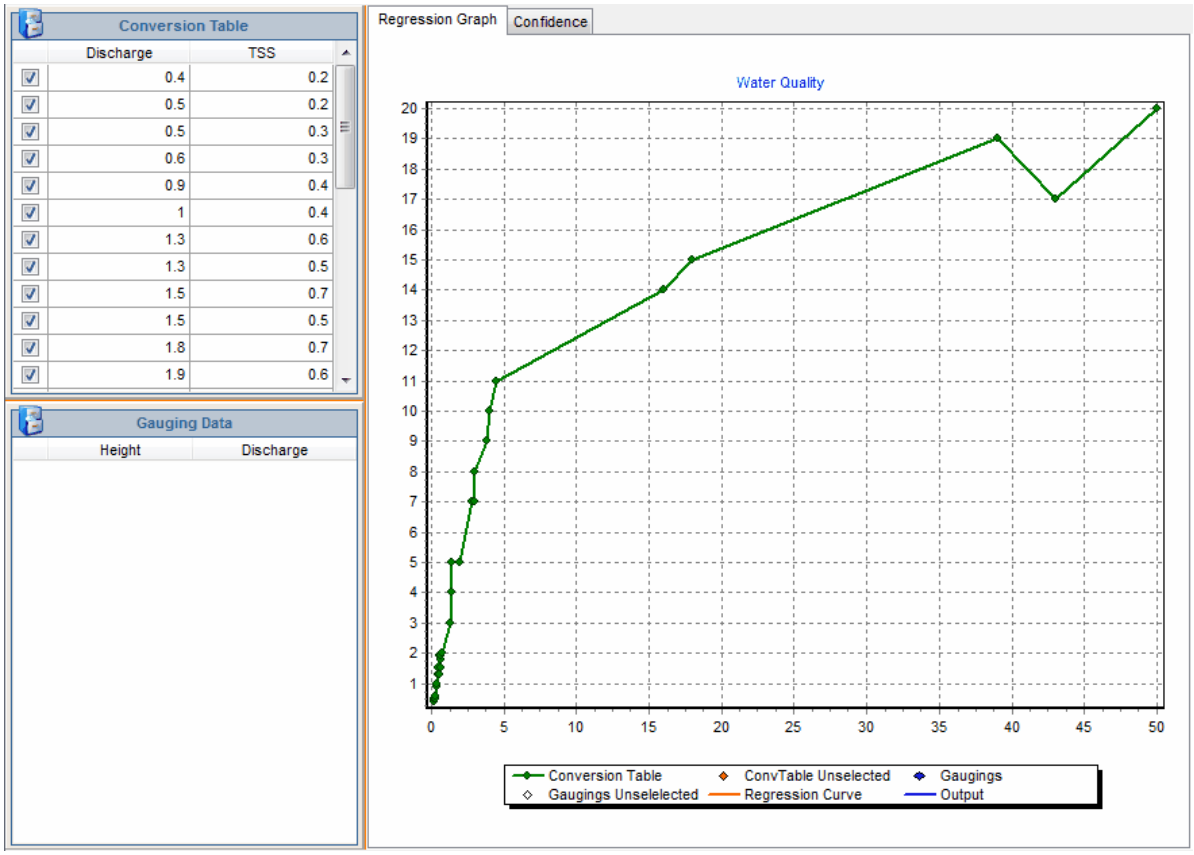


3. The table will be displayed in the **Conversion Table** area as well as graphically in the **Regression Graph** area.



4. Click the Result Settings button to apply start and end values and output increments for the regression analysis.

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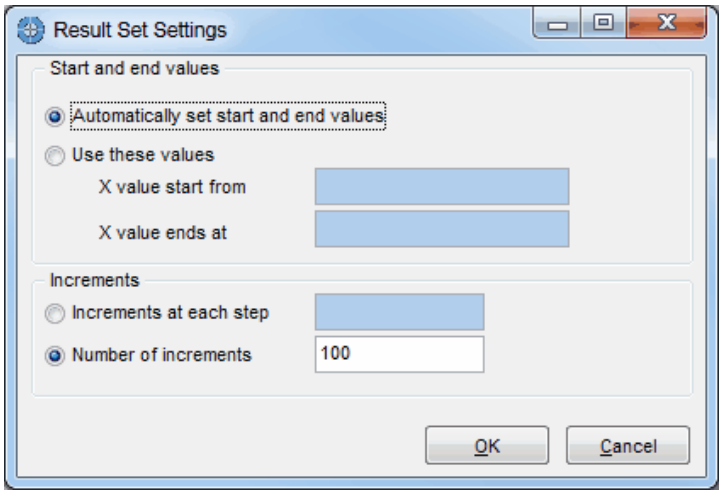


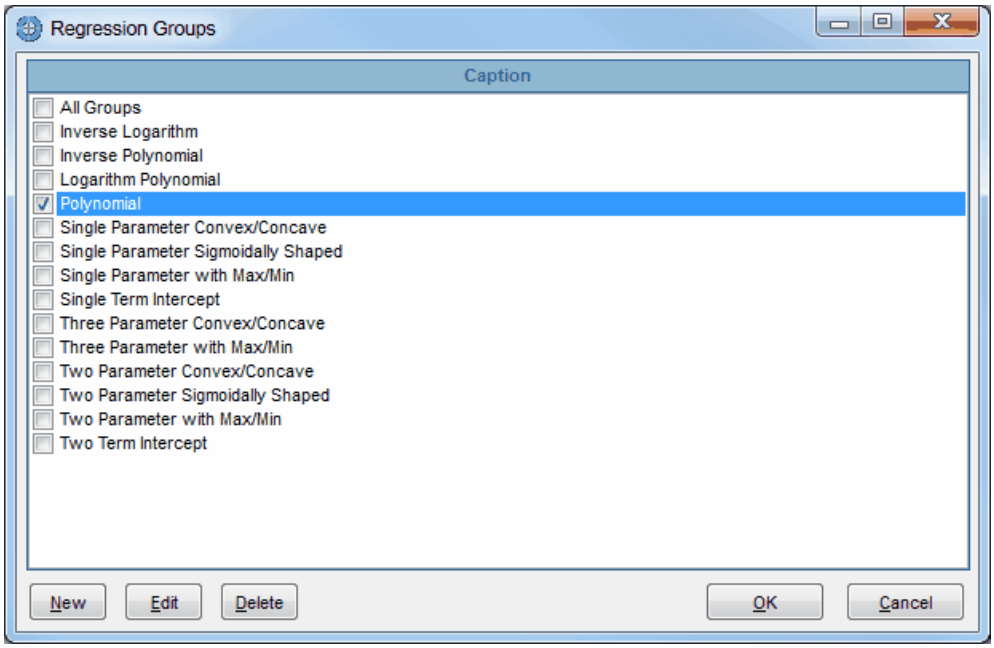
The user can elect to:

- *Automatically set start and end values*: the regression tool will use the lowest and highest values in the data as the start and end values.

- check the *Use these values* button and enter values manually.

- Enter a number of *Increments at each step* of the regression or enter a total *Number of increments* for the regression analysis.

5. Click the Analyse button to select the **Regression groups** and carry out the analysis. In this example the Polynomial regression models are selected.



Users can also click the New button to create and edit their own Regression group from the in-built Regression Models.

6. When you are satisfied with your selection, click **OK**. The regression analysis will be completed using your selected models and the results displayed to the right of the Regression Tool window.

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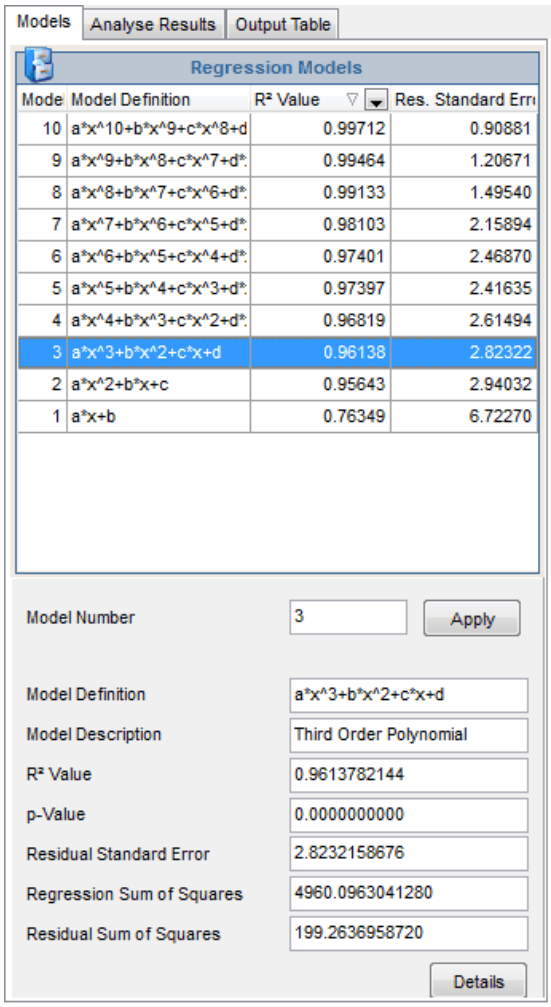

Selecting a model from the list will display the model graphically and present the statistical model details, including the R^2 value, p-Value, Standard Error and Sum of Squares information (as shown above). Further details can be found by clicking the **Details** button.

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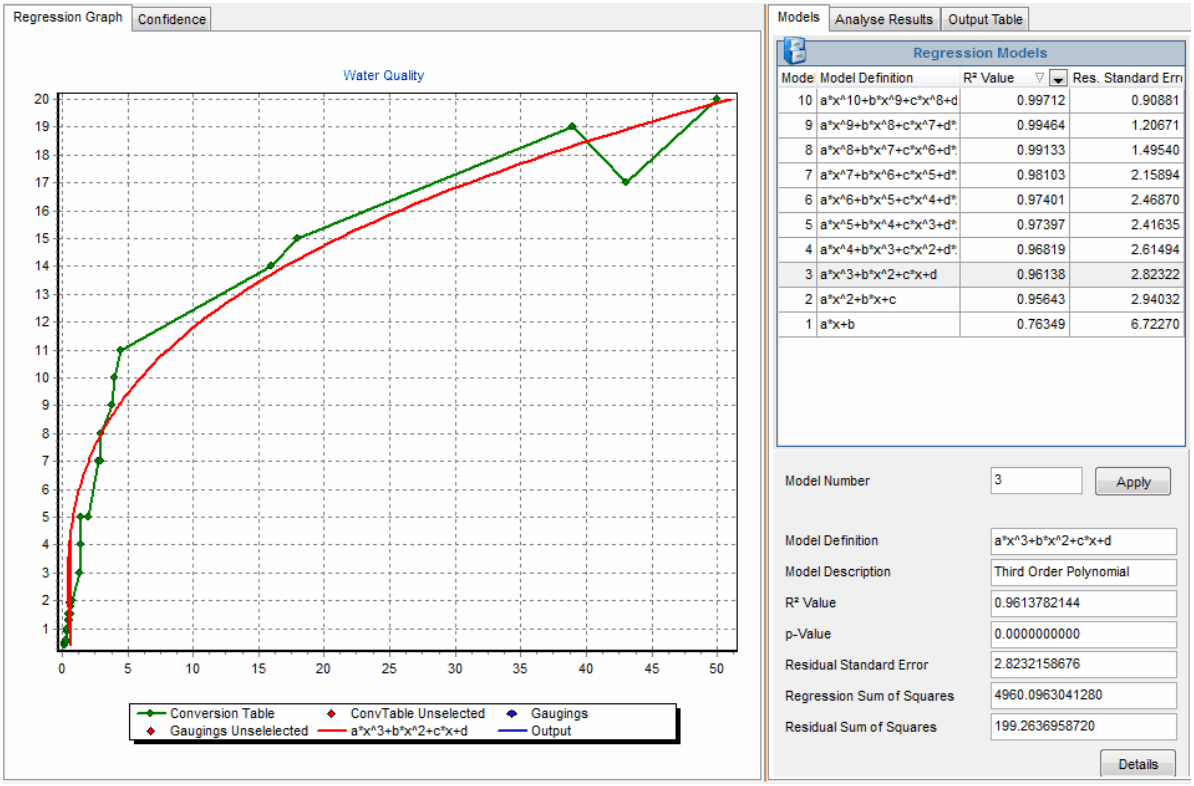
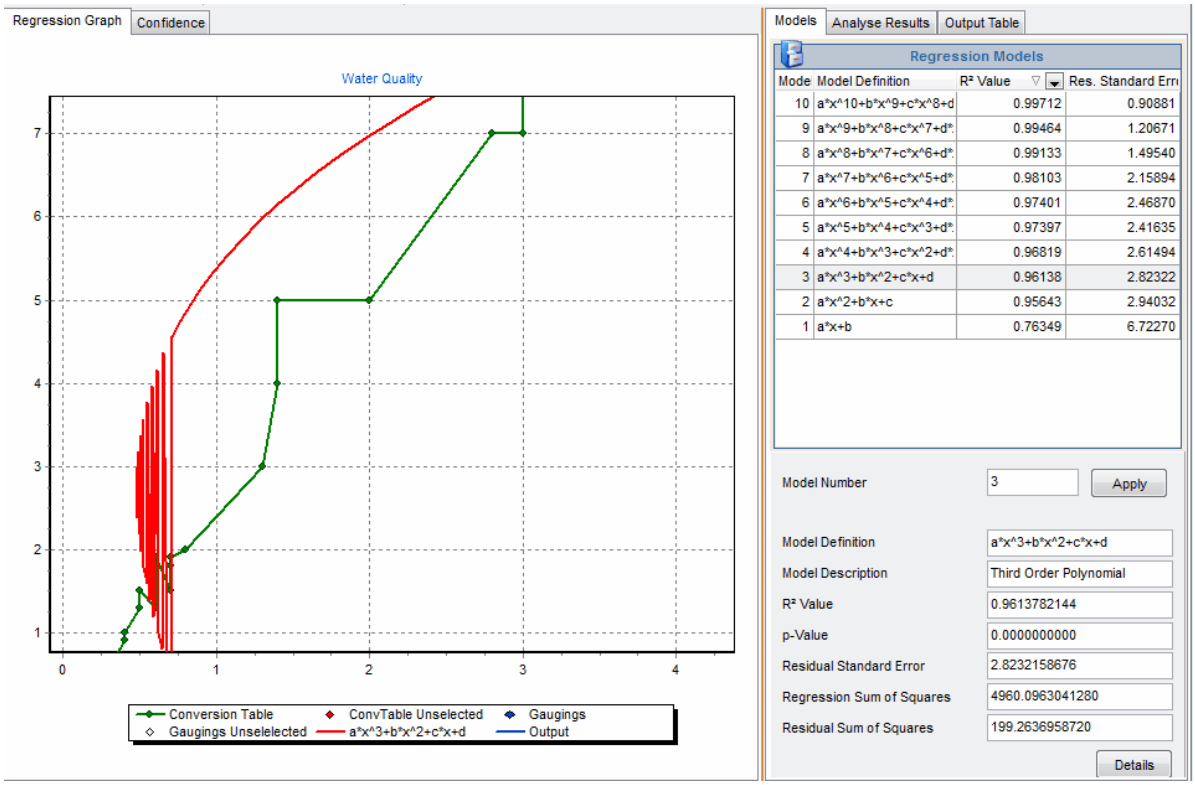


Developing a Water Quality Conversion Table

Continuing w ith this example, w e can develop a conversion table modelled on the measured w ater quality results:

1. Select Model number 3 - Third Order Polynomial.
2. Zooming in on the the low er end of the graph, w e can identify the curve that lines up suitably w ith the existing measure points:



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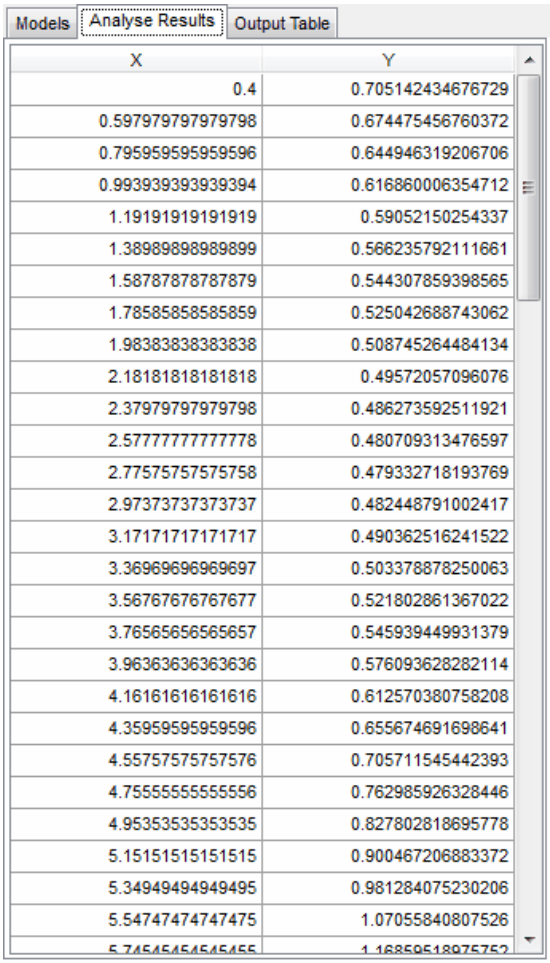
Note that you can select regression models from the list on the right, and the graph will reflect this change (red line).

3. In this example, I am satisfied with the regression model from a discharge point of about 4.5 (before this point the model is not reliably accurate). View the generated analysis results by selecting the **Analysis Results** tab.


Models | Analyse Results | Output Table

X	Y
0.4	0.705142434676729
0.597979797979798	0.674475456760372
0.795959595959596	0.644946319206706
0.993939393939394	0.616860006354712
1.19191919191919	0.59052150254337
1.38989898989899	0.566235792111661
1.58787878787879	0.544307859398565
1.78585858585859	0.525042688743062
1.98383838383838	0.508745264484134
2.18181818181818	0.49572057096076
2.37979797979798	0.486273592511921
2.57777777777778	0.480709313476597
2.77575757575758	0.479332718193769
2.97373737373737	0.482448791002417
3.17171717171717	0.490362516241522
3.36969696969697	0.503378878250063
3.56767676767677	0.521802861367022
3.76565656565657	0.545939449931379
3.96363636363636	0.576093628282114
4.16161616161616	0.612570380758208
4.35959595959596	0.655674691698641
4.55757575757576	0.705711545442393
4.75555555555556	0.762985926328446
4.95353535353535	0.827802818695778
5.15151515151515	0.900467206883372
5.34949494949495	0.981284075230206
5.54747474747475	1.07055840807526
5.74545454545455	1.16859518975752

4. The user can then highlight rows and output to a new table. In this example, we will select rows, right-click and select *Copy Selected Into Output*.
5. This moves any selected data into the **Output Table** tab.

Data in the Output Table is displayed in the Graph area in blue.

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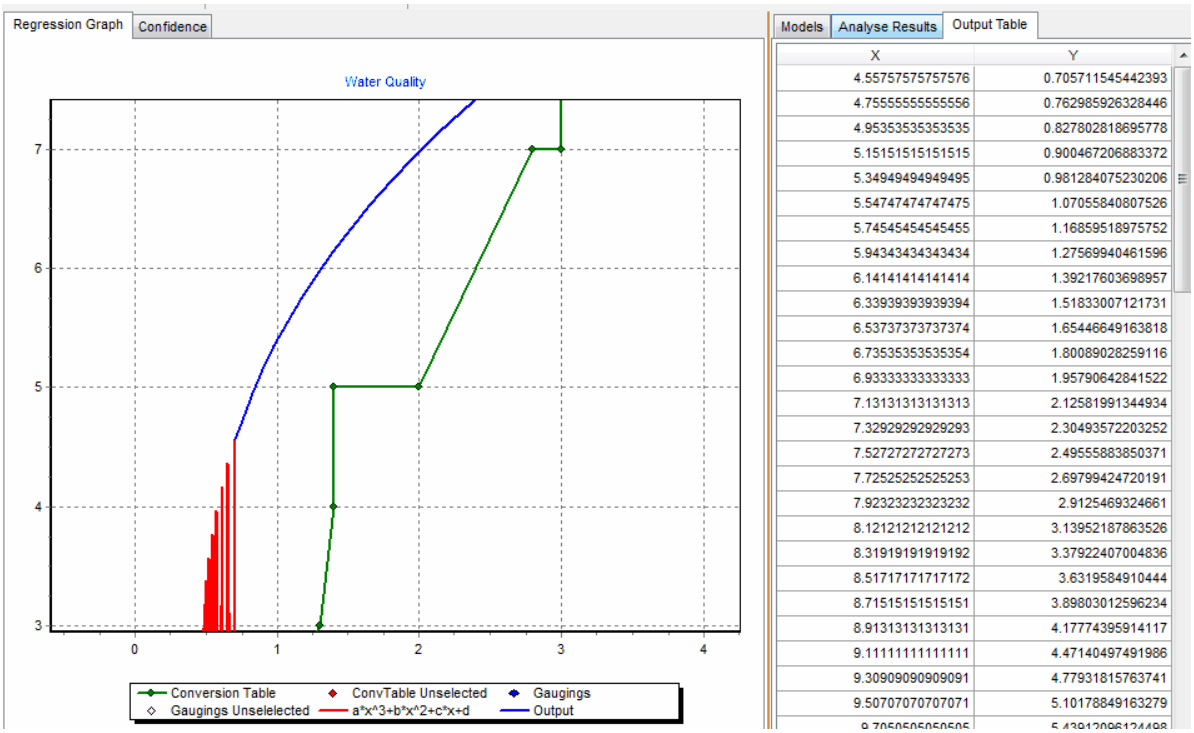
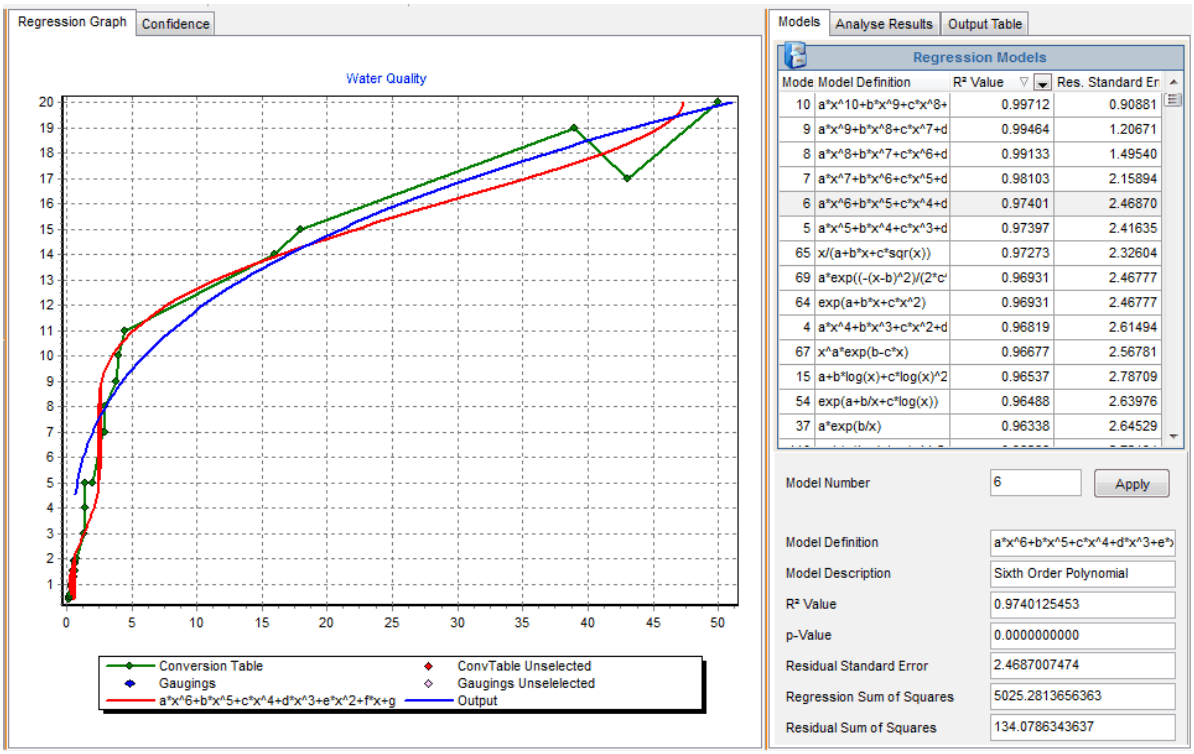


We now have part of a conversion table - for determining TSS based on Discharge - but still need the lower end of the table.

6. Click the **Analyse** button and select All Groups from the Regression Groups list. This will complete a regression analysis of the data using all available models in DataSight.
7. If you scroll through the *Regression Models* to the right of the window you can view the model graphically in the *Regression Graph* area. It displays which models fit the existing data points along with the Output Table we began creating in the previous steps.



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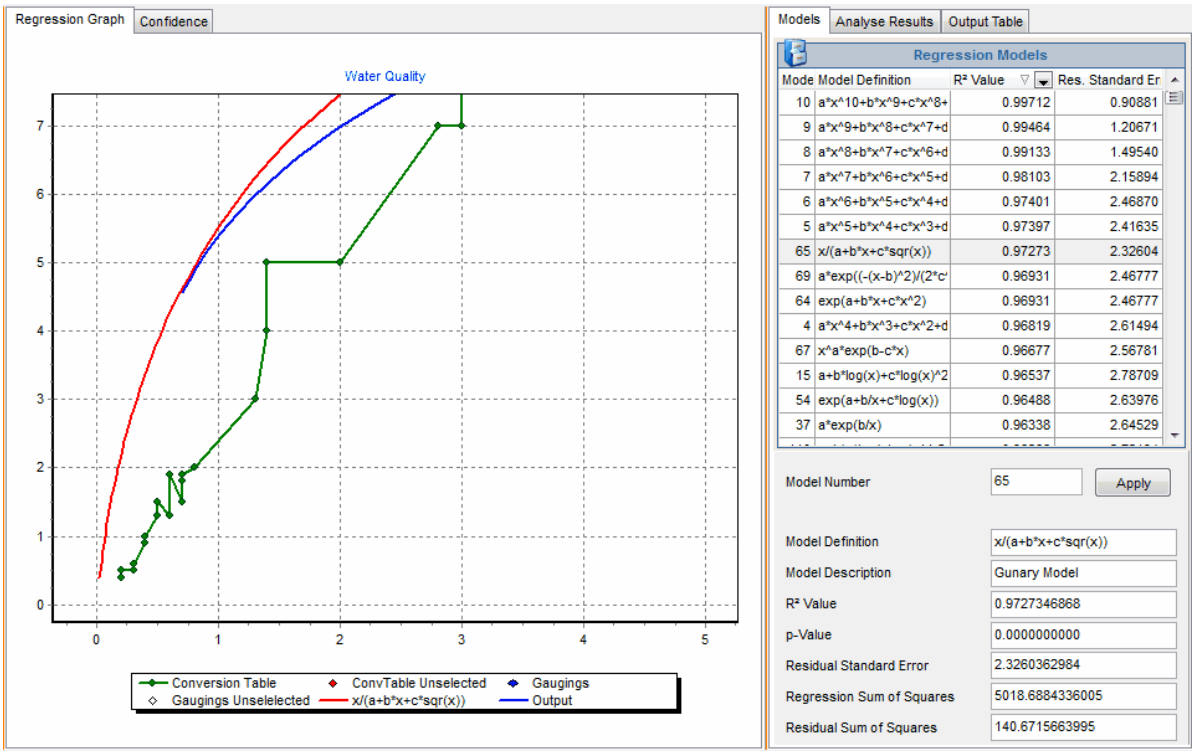
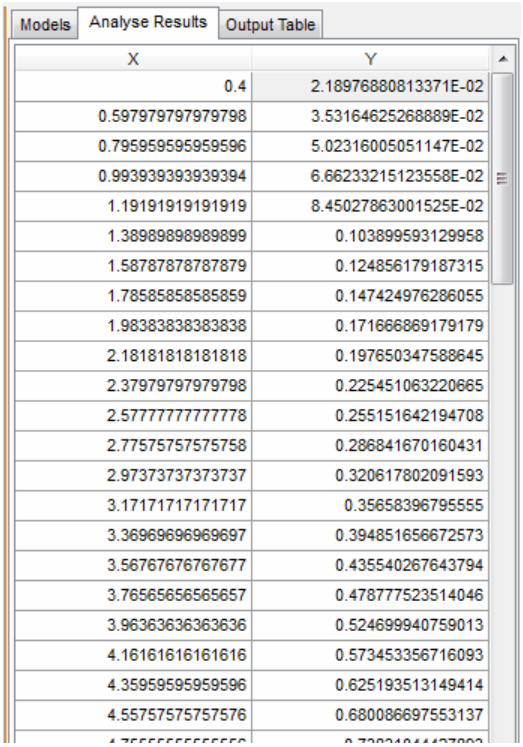
8. In this example, as it fits the line well, we select Model 65 - Gunary Model, as shown below.



9. Select the **Analyse Results** tab to display the results of the selected model.



10. Highlight the values you wish to move across to the Output Table, right-click and and select *Copy Selected Into Output*. In this example, generating the Conversion Table, this is the points with a discharge value below 4.5.

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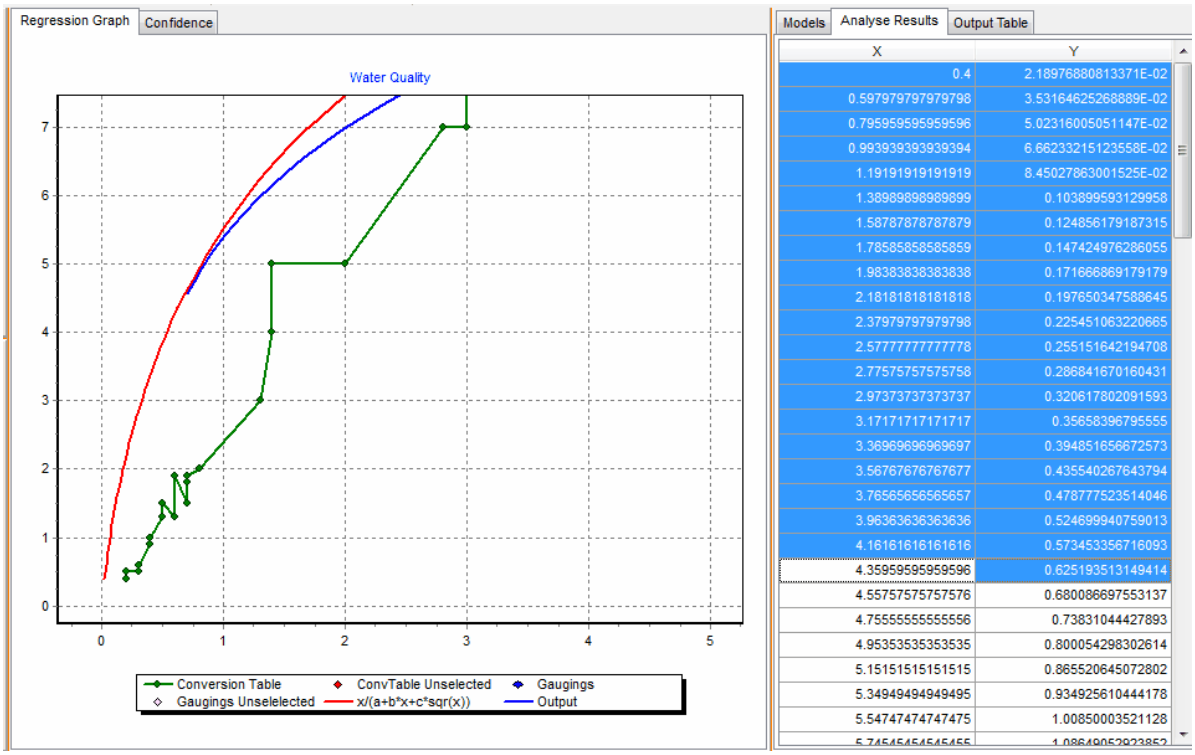

11. The Output Table will be displayed in the graphing area and can be saved (as a DataSight Conversion Table) by clicking the **Save** button on the toolbar and entering the following details:

- Rating Table Name
- X and Y axis Labels
- Period of Applicability (this is simply a set of reference dates for the user).
- select to Assign the conversion table to the Level 3 that the original conversion table data was assigned to.
- select to update existing data in the database.

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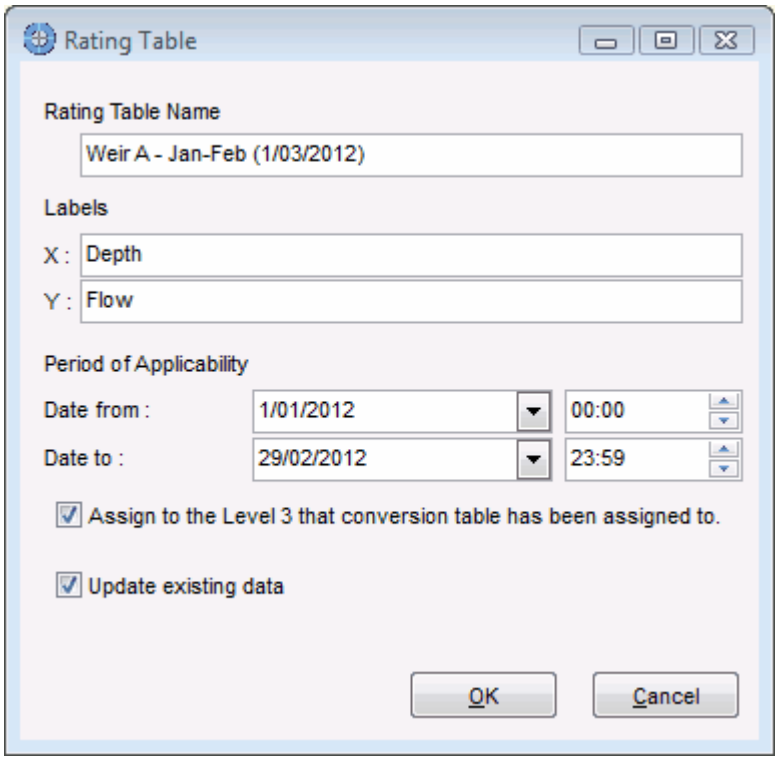

12. Click OK to save the Conversion Table.

13. Update existing data. Applying Conversion Table to (Updating) Existing Data

The Conversion Table will then be available from the Tools menu, and within the Conversion Tool for interpolation and use with other datasets.

18.3 Analysing hydrographic relationships using the Regression Tool

The regression tool also allows the user to fit different functions to a set of gauging data points and develop rating tables based on existing gauging data.

There are three aspects to the Regression Analysis Tool.

These are:

- Gaugings
- Conversion Tables
- Regression Tool

Regression Analysis can be performed on Gauging data, Conversion Table data or both.

To perform regression analysis a conversion table must exist (or be created). The procedure for this is outlined in the previous chapter.

In order to carry out the regression analysis the Conversion Table must also be assigned to a station.

It is necessary to have some gauging information within the database to complete regression analysis. The procedure for entering Gauging data is covered in a later chapter.

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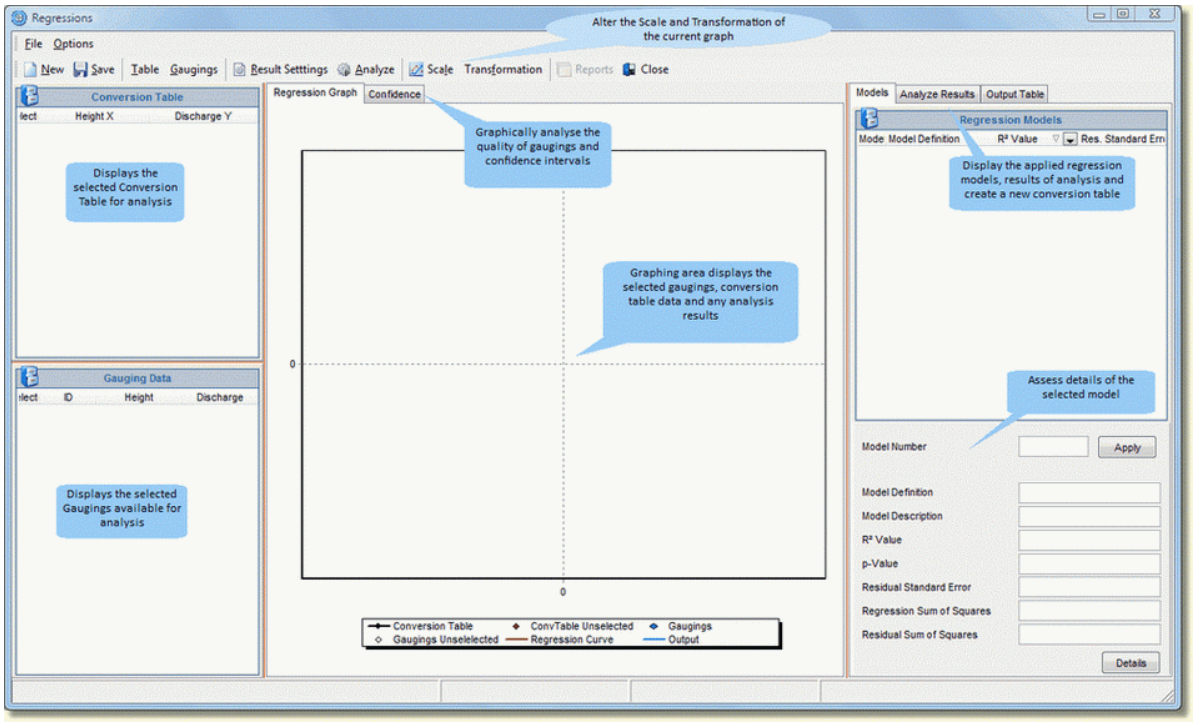
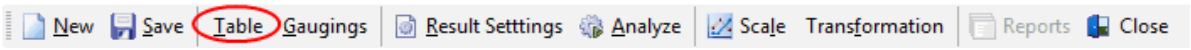
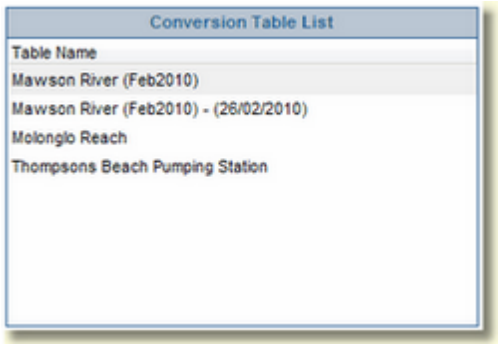


When you open the Regression Tool, the first thing you will need to do is load the **Conversion Table** and **Gauging** data.



1. Click the **Table** button on the toolbar to select the Conversion Table for analysis.

The user will be presented with a list of available Conversion Tables - i.e. those that exist within the current database.



Select the Conversion Table you wish to use for analysis and click OK.

Within the Regression Tool, the Conversion Table area will be populated with data from the selected Conversion Table and the Regression Graph area will display the Conversion Table graphically.

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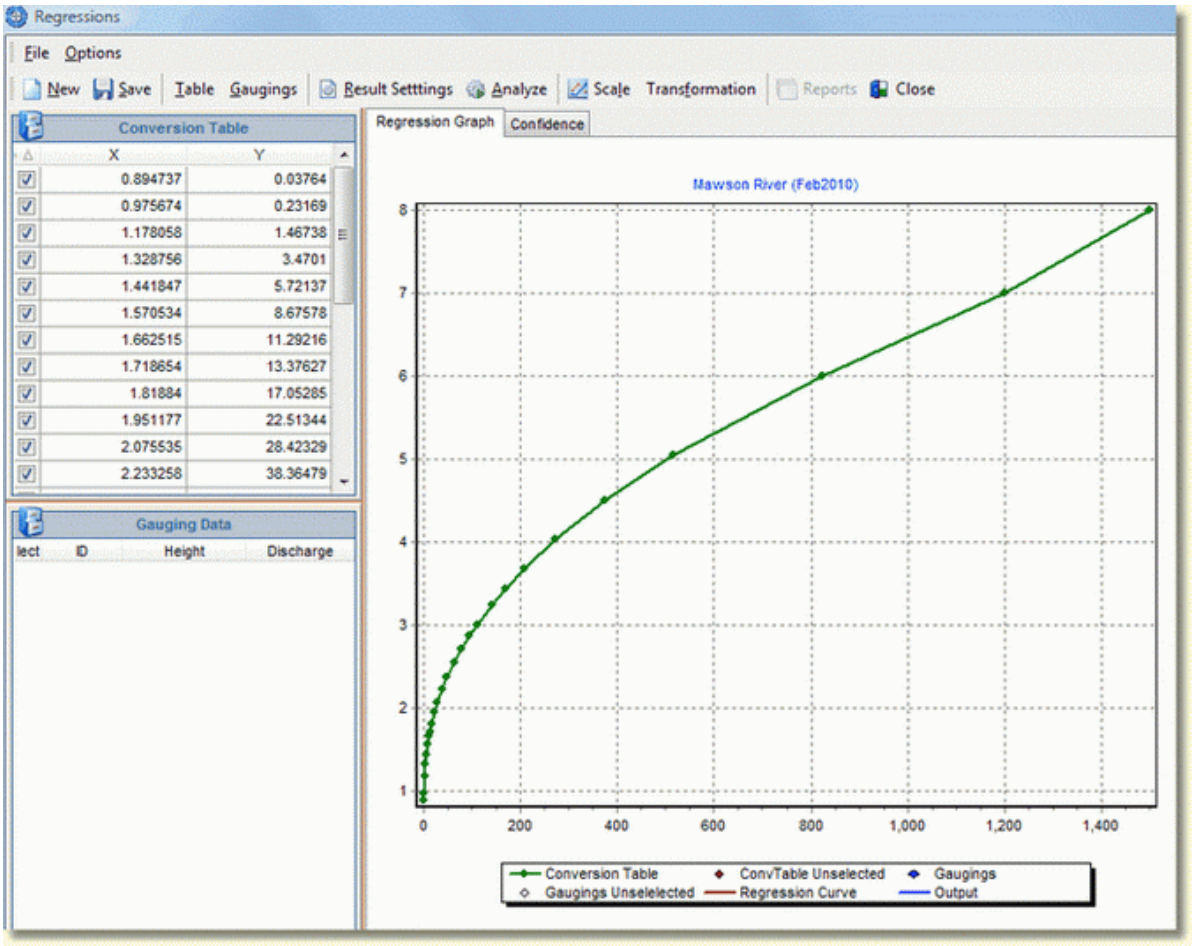
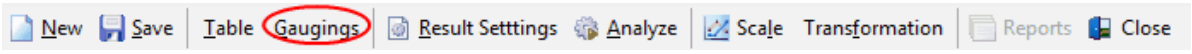
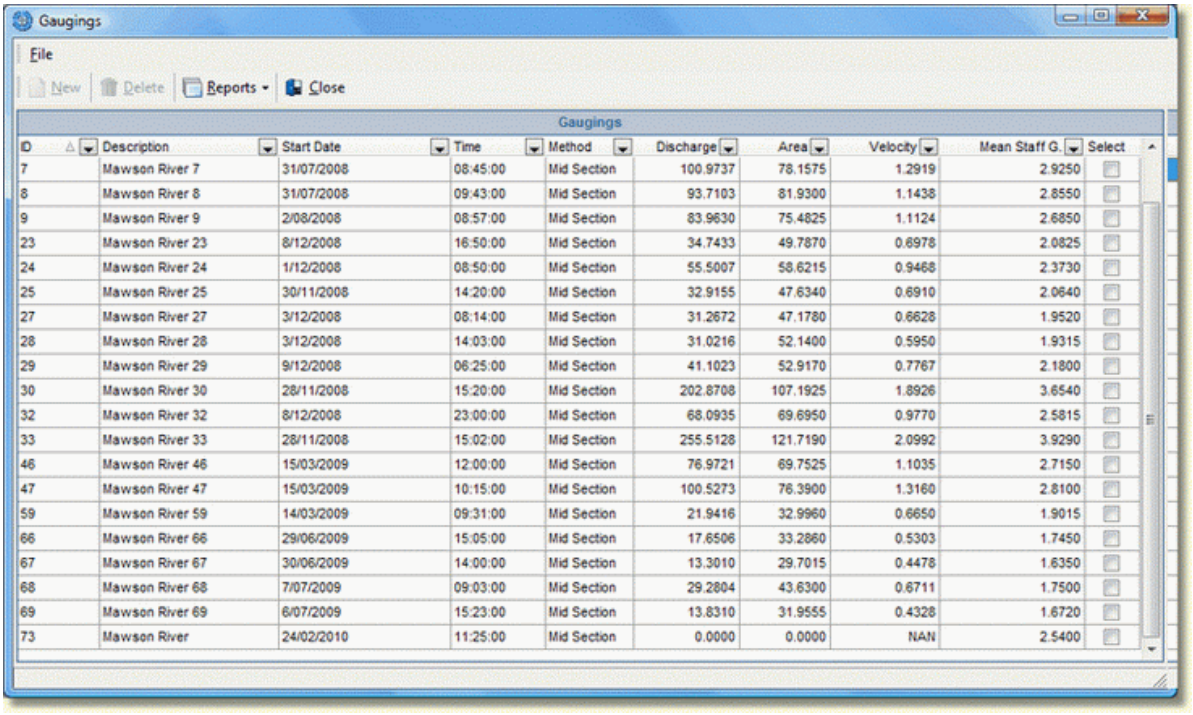




2. Click the **Gaugings** button on the toolbar to select the Gaugings for analysis.



ID	Description	Start Date	Time	Method	Discharge	Area	Velocity	Mean Staff G.	Select
7	Mawson River 7	31/07/2008	08:45:00	Mid Section	100.9737	78.1575	1.2919	2.9250	
8	Mawson River 8	31/07/2008	09:43:00	Mid Section	93.7103	81.9300	1.1438	2.8550	
9	Mawson River 9	2/08/2008	08:57:00	Mid Section	83.9630	75.4825	1.1124	2.6850	
23	Mawson River 23	8/12/2008	16:50:00	Mid Section	34.7433	49.7870	0.6978	2.0825	
24	Mawson River 24	1/12/2008	08:50:00	Mid Section	55.5007	58.6215	0.9468	2.3730	
25	Mawson River 25	30/11/2008	14:20:00	Mid Section	32.9155	47.6340	0.6910	2.0640	
27	Mawson River 27	3/12/2008	08:14:00	Mid Section	31.2672	47.1780	0.6628	1.9520	
28	Mawson River 28	3/12/2008	14:03:00	Mid Section	31.0216	52.1400	0.5950	1.9315	
29	Mawson River 29	9/12/2008	06:25:00	Mid Section	41.1023	52.9170	0.7767	2.1800	
30	Mawson River 30	28/11/2008	15:20:00	Mid Section	202.8708	107.1925	1.8926	3.6540	
32	Mawson River 32	8/12/2008	23:00:00	Mid Section	68.0935	69.6950	0.9770	2.5815	
33	Mawson River 33	28/11/2008	15:02:00	Mid Section	255.5128	121.7190	2.0992	3.9290	
46	Mawson River 46	15/03/2009	12:00:00	Mid Section	76.9721	69.7525	1.1035	2.7150	
47	Mawson River 47	15/03/2009	10:15:00	Mid Section	100.5273	76.3900	1.3160	2.8100	
59	Mawson River 59	14/03/2009	09:31:00	Mid Section	21.9416	32.9960	0.6650	1.9015	
66	Mawson River 66	29/06/2009	15:05:00	Mid Section	17.6506	33.2860	0.5303	1.7450	
67	Mawson River 67	30/06/2009	14:00:00	Mid Section	13.3010	29.7015	0.4478	1.6350	
68	Mawson River 68	7/07/2009	09:03:00	Mid Section	29.2804	43.6300	0.6711	1.7500	
69	Mawson River 69	6/07/2009	15:23:00	Mid Section	13.8310	31.9555	0.4328	1.6720	
73	Mawson River	24/02/2010	11:25:00	Mid Section	0.0000	0.0000	NAN	2.5400	

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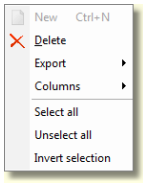
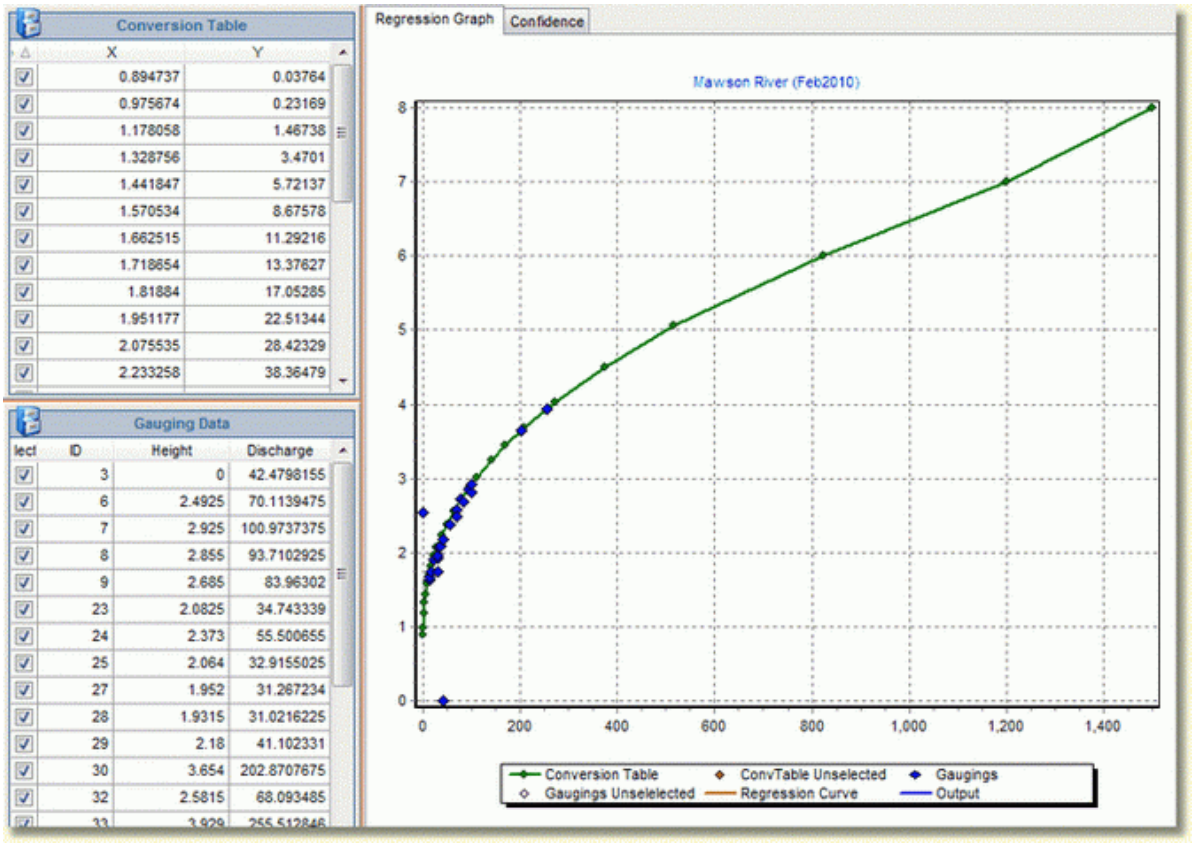


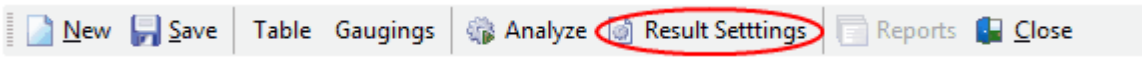
Select individual gaugings by checking the boxes on the right of the Gaugings window, or right-click on the window and **Select All**.

This will populate the Gauging Data area of the Regression Tool, allowing regressions to be carried out on those selected, and plot the gaugings graphically in the Regression Graph area.

This is displayed below.



The user can select and deselect rows from the Conversion Table, and those from the Gaugings before (or after) carrying out analysis, by selecting the checkboxes at the left.



Selecting the **Result Settings** button allows the user to define the upper and lower boundaries of the result set produced during analysis, along with the required number of increments required for the result set.

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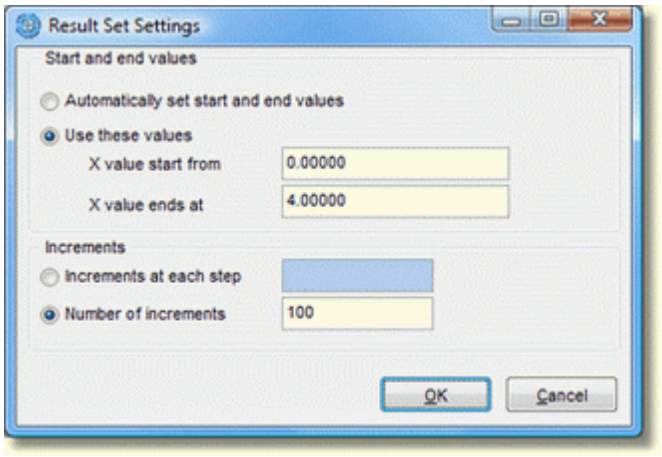
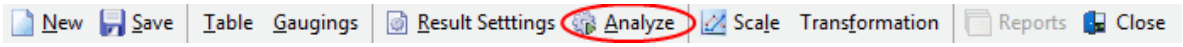
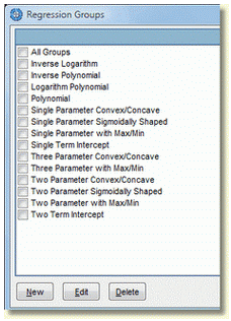




Once you have selected the conversion table and gaugings you w ish to use, click **Analyse** in the toolbar to begin regression analysis.



A list of the available Regression Groups w ill be displayed.

Select the applicable Group (or select *All Groups*) and click **OK**.

By clicking **New**, users also have the option of creating their ow n Group (using the in-built regression models).

Details of the Regression Groups available for analysis are found in the follow ing pages.

When the user clicks **OK**, DataSight w ill complete the regression analysis and display the results of each model graphically.

On the right, details of the Regression Models w ill be displayed. A graphical representation of the model w ill be displayed in the Regression Graph w indow in the middle of the Regression Tool.

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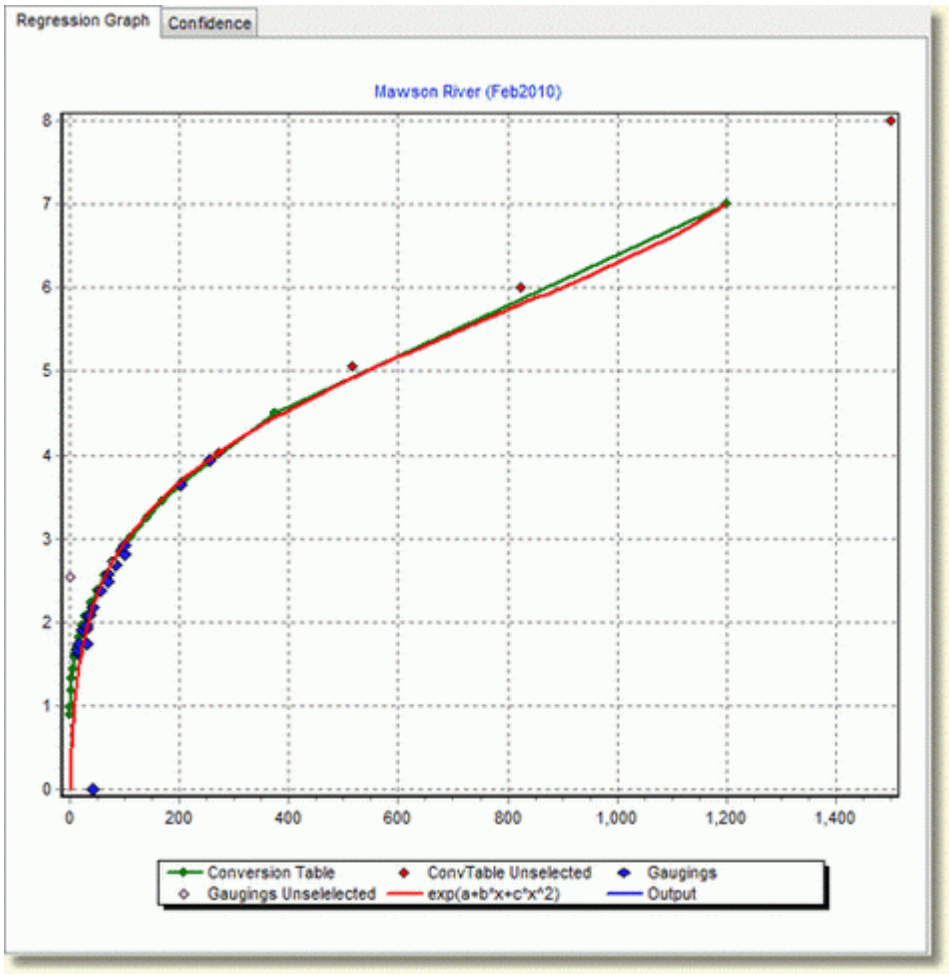

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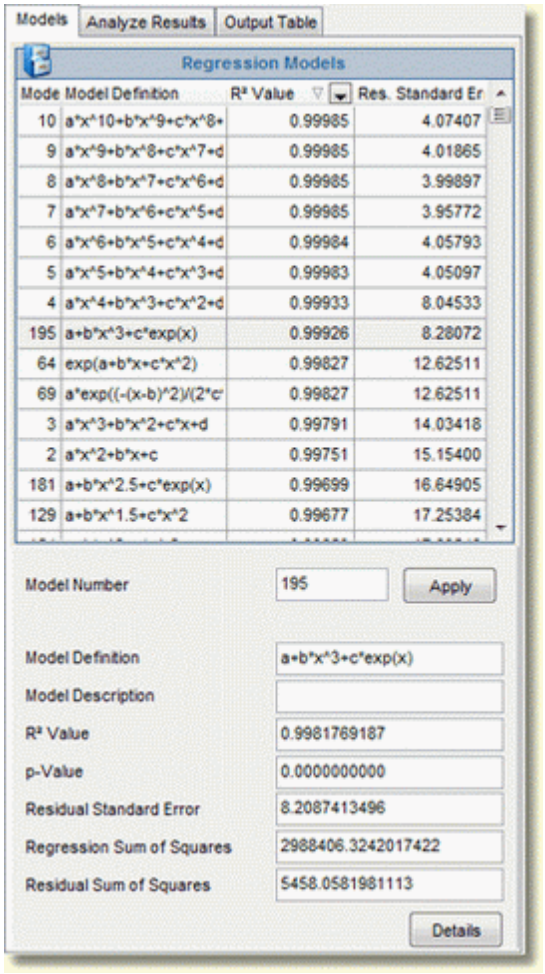


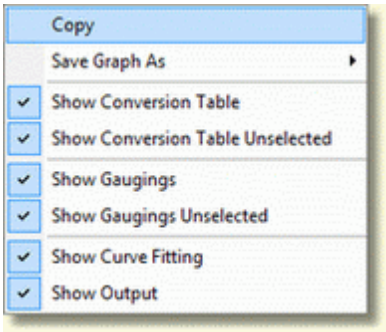
Model details are displayed at the bottom of the Models window (at the right).

This includes the R^2 value, p-Value, Standard Error and Sum of Squares information.

Further details can be found by clicking the Details button.

Graphical Display

- Users can scroll through the Models - to display them on the graph.
- Check or Un-check the boxes in the gauging list and conversion table, to remove these from the regression calculation.
- While viewing the graph, users can alter the Result Set Settings, altering the start and end values.
- **Zoom** by clicking the *left mouse button* and dragging.
- **Pan** around the graph by *right-clicking* the graph and dragging.
- Right-clicking the mouse button also displays a menu allowing the user to copy and save the graph, and turn the various series in the graph on or off.



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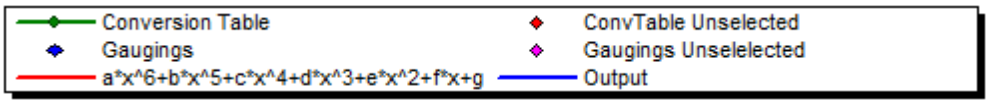
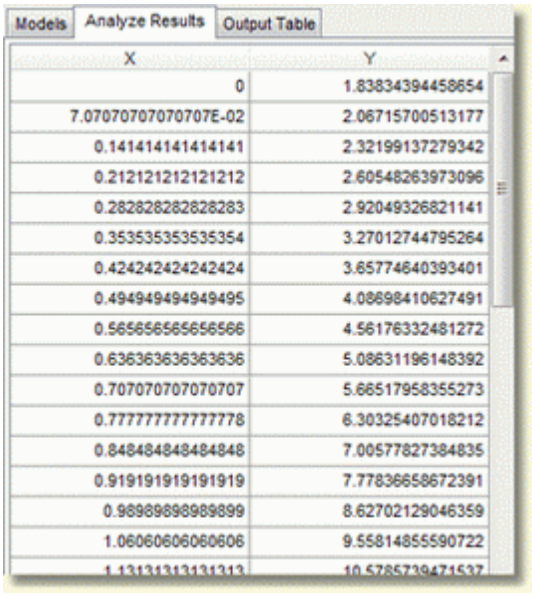
The Graph Legend



The graph legend is standard, displaying the six different series view able in the Regression Tool.

Selecting the **Analyse Results** tab w ill display the results of the analysis (using the selected model that is currently displayed on the graph).

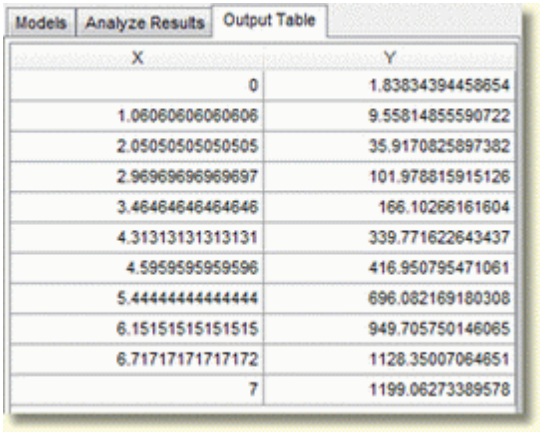


X	Y
0	1.83834394458654
7.07070707070707E-02	2.06715700513177
0.141414141414141	2.32199137279342
0.212121212121212	2.60548263973096
0.282828282828283	2.92049326821141
0.353535353535354	3.27012744795264
0.424242424242424	3.65774640393401
0.494949494949495	4.08698410627491
0.565656565656566	4.56176332481272
0.636363636363636	5.08631196148392
0.707070707070707	5.66517958355273
0.777777777777778	6.30325407018212
0.848484848484848	7.00577827384835
0.919191919191919	7.77836658672391
0.989898989899	8.62702129046359
1.06060606060606	9.55814855590722
1.13131313131313	10.578573947153?

Within the Analyse Results w indow that the user can begin to *create new Conversion Tables* (based on the results of the Regression Analysis).

Simply select the lines you w ish to use in your new Conversion Table. Then right-click on the table and select **Copy Selected into Output**.

Then, w hen you view the Output Table tab, you can see the new ly created Conversion Table data. This data w ill also be displayed on the graph.



X	Y
0	1.83834394458654
1.06060606060606	9.55814855590722
2.05050505050505	35.9170825897382
2.96969696969697	101.978815915126
3.46464646464646	166.10266161604
4.31313131313131	339.771622643437
4.5959595959596	416.950795471061
5.44444444444444	696.082169180308
6.15151515151515	949.705750146065
6.71717171717172	1128.35007064651
7	1199.06273389578

Select **Save** from the toolbar to save the rating table.

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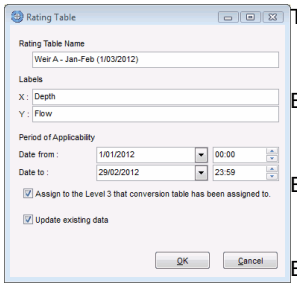

This will open the Save Rating Table dialog window.

Enter the name of the new Rating Table.

Enter the X and Y axis Labels.

Enter the Period of Applicability for the new Rating Table.

Users can also elect to Assign the rating table to the same Level 3 as the current Conversion Table.

'Update existing data' needs to be clicked to be able to apply the new rating table (shift) to existing data.

Click OK.

18.4 Regression Models

The following is a list of the in-built models that are available within the DataSight Regression Tool.

Model Number	Formula	Model Name	Group Name
1	a*x+b	First Order Polynomial	Polynomial
2	a*x^2+b*x+c	Second Order Polynomial	Polynomial
3	a*x^3+b*x^2+c*x+d	Third Order Polynomial	Polynomial
4	a*x^4+b*x^3+c*x^2+d*x+e	Fourth Order Polynomial	Polynomial
5	a*x^5+b*x^4+c*x^3+d*x^2+e*x+f	Fifth Order Polynomial	Polynomial
6	a*x^6+b*x^5+c*x^4+d*x^3+e*x^2+f*x+g	Sixth Order Polynomial	Polynomial
7	a*x^7+b*x^6+c*x^5+d*x^4+e*x^3+f*x^2+g*x+h	Seventh Order Polynomial	Polynomial
8	a*x^8+b*x^7+c*x^6+d*x^5+e*x^4+f*x^3+g*x^2+h*x+i	Eighth Order Polynomial	Polynomial
9	a*x^9+b*x^8+c*x^7+d*x^6+e*x^5+f*x^4+g*x^3+h*x^2+i*x+j	Ninth Order Polynomial	Polynomial
10	a*x^10+b*x^9+c*x^8+d*x^7+e*x^6+f*x^5+g*x^4+h*x^3+i*x^2+j*x+k	Tenth Order Polynomial	Polynomial
45	a+b*log(x)	First Order Logarithm	Logarithm Polynomial
45	a+b*log(x)	Logarithm Model	Logarithm Polynomial
12	a+b*log(x)+c*log(x)^2	Second Order Logarithm	Logarithm Polynomial
13	a+b*log(x)+c*log(x)^2+d*log(x)^3	Third Order Logarithm	Logarithm Polynomial
14	a+b*log(x)+c*log(x)^2+d*log(x)^3+e*log(x)^4	Fourth Order Logarithm	Logarithm Polynomial
15	a+b*log(x)+c*log(x)^2+d*log(x)^3+e*log(x)^4+f*log(x)^5	Fifth Order Logarithm	Logarithm Polynomial
50	a+b/x	First Order Inverse	Inverse Polynomial

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Model Number	Formula	Model Name	Group Name
50	a+b/x	Hyperbolic Model	Inverse Polynomial
17	a+b/x+c/x^2	Second Order Inverse	Inverse Polynomial
18	a+b/x+c/x^2+d/x^3	Third Order Inverse	Inverse Polynomial
19	a+b/x+c/x^2+d/x^3+e/x^4	Fourth Order Inverse	Inverse Polynomial
20	a+b/x+c/x^2+d/x^3+e/x^4+f/x^5	Fifth Order Inverse	Inverse Polynomial
21	a+b/log(x)	First Order Inverse Logarithm	Inverse Logarithm
22	a+b/log(x)+c/log(x)^2	Second Order Inverse Logarithm	Inverse Logarithm
23	a+b/log(x)+c/log(x)^2+d/log(x)^3	Third Order Inverse Logarithm	Inverse Logarithm
24	a+b/log(x)+c/log(x)^2+d/log(x)^3+e/log(x)^4	Fourth Order Inverse Logarithm	Inverse Logarithm
25	a+b/log(x)+c/log(x)^2+d/log(x)^3+e/log(x)^4+f/log(x)^5	Fifth Order Inverse Logarithm	Inverse Logarithm
26	log(x-a)		Single Parameter Convex/Concave
27	1/(1+a*x)		Single Parameter Convex/Concave
28	exp(x-a)		Single Parameter Convex/Concave
29	x^a		Single Parameter Convex/Concave
30	a^(1/x)	Root Model	Single Parameter Convex/Concave
31	1/(x+a)		Single Parameter Convex/Concave
32	1-1/(x^a)		Single Parameter Convex/Concave
33	log(a+b*x)		Two Parameter Convex/Concave
34	a*x^b	Power (Freundlich)	Two Parameter Convex/Concave
35	a*b^x	Modified Power	Two Parameter Convex/Concave
36	a*exp(b*x)	Exponential	Two Parameter Convex/Concave
37	a*exp(b/x)	Modified Exponential	Two Parameter Convex/Concave
38	exp(a+b*x)		Two Parameter Convex/Concave
39	a*b*x/(1+b*x)	Rectangular Hyperbola	Two Parameter Convex/Concave
40	x/(a*x+b)		Two Parameter Convex/Concave
41	1/(a+b*x)	Reciprocal Model	Two Parameter Convex/Concave
42	a/(1+b*x)		Two Parameter Convex/Concave
43	a*(x-b)		Two Parameter Convex/Concave
44	a*(1+x)^b		Two Parameter Convex/Concave
45	a+b*log(x)	First Order Logarithm	Two Parameter Convex/Concave
45	a+b*log(x)	Logarithm Model	Two Parameter Convex/Concave
46	1/(a+b*log(x))	Reciprocal Logarithm Model	Two Parameter Convex/Concave
47	a*x^(b*x)	Geometric Model	Two Parameter Convex/Concave
48	a*x^(b/x)	Modified Geometric Model	Two Parameter Convex/Concave
49	a*x/(b+x)	Saturation Growth Model	Two Parameter Convex/Concave
50	a+b/x	First Order Inverse	Two Parameter Convex/Concave
50	a+b/x	Hyperbolic Model	Two Parameter Convex/Concave
51	a*b^x*x^c	Hoerl Model	Three Parameter Convex/Concave
52	a*b^(1/x)*x^c	Modified Hoerl Model	Three Parameter Convex/Concave

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Model Number	Formula	Model Name	Group Name
53	1/(a+b*x+c*x^2)	Reciprocal Quadratic (Holliday)	Three Parameter Convex/Concave
54	exp(a+b/x+c*log(x))	Vapor Pressure Model	Three Parameter Convex/Concave
55	a+b*x+c/x^2	Heat Capacity Model	Three Parameter Convex/Concave
56	a/(1+b*x+c*x^2)		Three Parameter Convex/Concave
57	cos(x+a)	Trigonometric	Single Parameter with Max/Min
58	sin(x+a)	Trigonometric II	Single Parameter with Max/Min
59	1-exp(-a*x^2)		Single Parameter with Max/Min
60	exp(-a*x^2)		Single Parameter with Max/Min
61	a*cos(x)+b*sin(x)		Two Parameter with Max/Min
62	x/(a+b*x+c*x^2)		Three Parameter with Max/Min
63	a+b*cos(x)+c*sin(x)		Three Parameter with Max/Min
64	exp(a+b*x+c*x^2)		Three Parameter with Max/Min
65	x/(a+b*x+c*sqr(x))	Gunary Model	Three Parameter with Max/Min
66	a*x^b*exp(-c*x)		Three Parameter with Max/Min
67	x^a*exp(b-c*x)		Three Parameter with Max/Min
68	a*x^b*(1-x)^c	Beta Distribution Model	Three Parameter with Max/Min
69	a*exp((-(x-b)^2)/(2*c^2))	Gaussian Distribution Model	Three Parameter with Max/Min
70	1-exp(-x^a)		Single Parameter Sigmoidally Shaped
71	exp(-x^a)		Single Parameter Sigmoidally Shaped
72	1-exp(-a*x^b)		Two Parameter Sigmoidally Shaped
73	1-exp(-a*b^x)		Two Parameter Sigmoidally Shaped
74	exp(-exp(a-b*x))		Two Parameter Sigmoidally Shaped
75	a+b*x*log(x)		Single Term Intercept
76	a+b*x^1.5		Single Term Intercept
77	a+b*x^2		Single Term Intercept
78	a+b*x^2*log(x)		Single Term Intercept
79	a+b*x^2.5		Single Term Intercept
80	a+b*x^3		Single Term Intercept
81	a+b*exp(x)		Single Term Intercept
82	a+b*x^.5*log(x)		Single Term Intercept
83	a+b*log(x)^2		Single Term Intercept
84	a+b*x/log(x)		Single Term Intercept
85	a+b*x^.5		Single Term Intercept
86	a+b/x^.5		Single Term Intercept
87	a+b*log(x)/x		Single Term Intercept
88	a+b/x^1.5		Single Term Intercept
89	a+b*log(x)/x^2		Single Term Intercept
90	a+b/x^2		Single Term Intercept
91	a+b*exp(-x)		Single Term Intercept

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Model Number	Formula	Model Name	Group Name
92	a+b*x+c*x*log(x)		Two Term Intercept
93	a+b*x+c*x^1.5		Two Term Intercept
94	a+b*x+c*x^2*log(x)		Two Term Intercept
95	a+b*x+c*x^2.5		Two Term Intercept
96	a+b*x+c*x^3		Two Term Intercept
97	a+b*x+c*exp(x)		Two Term Intercept
98	a+b*x+c*x^.5*log(x)		Two Term Intercept
99	a+b*x+c*log(x)^2		Two Term Intercept
100	a+b*x+c*x/log(x)		Two Term Intercept
101	a+b*x+c*x^.5		Two Term Intercept
102	a+b*x+c*log(x)		Two Term Intercept
103	a+b*x+c/log(x)		Two Term Intercept
104	a+b*x+c/x^.5		Two Term Intercept
105	a+b*x+c*log(x)/x		Two Term Intercept
106	a+b*x+c/x		Two Term Intercept
107	a+b*x+c/x^1.5		Two Term Intercept
108	a+b*x+c*log(x)/x^2		Two Term Intercept
109	a+b*x+c*exp(-x)		Two Term Intercept
110	a+b*x*log(x)+c*x^1.5		Two Term Intercept
111	a+b*x*log(x)+c*x^2		Two Term Intercept
112	a+b*x*log(x)+c*x^2*log(x)		Two Term Intercept
113	a+b*x*log(x)+c*x^2.5		Two Term Intercept
114	a+b*x*log(x)+c*x^3		Two Term Intercept
115	a+b*x*log(x)+c*exp(x)		Two Term Intercept
116	a+b*x*log(x)+c*x^.5*log(x)		Two Term Intercept
117	a+b*x*log(x)+c*log(x)^2		Two Term Intercept
118	a+b*x*log(x)+c*x/log(x)		Two Term Intercept
119	a+b*x*log(x)+c*x^.5		Two Term Intercept
120	a+b*x*log(x)+c*log(x)		Two Term Intercept
121	a+b*x*log(x)+c/log(x)		Two Term Intercept
122	a+b*x*log(x)+c/x^.5		Two Term Intercept
123	a+b*x*log(x)+c*log(x)/x		Two Term Intercept
124	a+b*x*log(x)+c/x		Two Term Intercept
125	a+b*x*log(x)+c/x^1.5		Two Term Intercept
126	a+b*x*log(x)+c*log(x)/x^2		Two Term Intercept
127	a+b*x*log(x)+c/x^2		Two Term Intercept
128	a+b*x*log(x)+c*exp(-x)		Two Term Intercept
129	a+b*x^1.5+c*x^2		Two Term Intercept
130	a+b*x^1.5+c*x^2*log(x)		Two Term Intercept
131	a+b*x^1.5+c*x^2.5		Two Term Intercept
132	a+b*x^1.5+c*x^3		Two Term Intercept
133	a+b*x^1.5+c*exp(x)		Two Term Intercept
134	a+b*x^1.5+c*x^.5*log(x)		Two Term Intercept
135	a+b*x^1.5+c*log(x)^2		Two Term Intercept

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Model Number	Formula	Model Name	Group Name
136	a+b*x^1.5+c*x/log(x)		Two Term Intercept
137	a+b*x^1.5+c*x^.5		Two Term Intercept
138	a+b*x^1.5+c*log(x)		Two Term Intercept
139	a+b*x^1.5+c/log(x)		Two Term Intercept
140	a+b*x^1.5+c/x^.5		Two Term Intercept
141	a+b*x^1.5+c*log(x)/x		Two Term Intercept
142	a+b*x^1.5+c/x		Two Term Intercept
143	a+b*x^1.5+c/x^1.5		Two Term Intercept
144	a+b*x^1.5+c*log(x)/x^2		Two Term Intercept
145	a+b*x^1.5+c/x^2		Two Term Intercept
146	a+b*x^1.5+c*exp(-x)		Two Term Intercept
147	a+b*x^2+c*x^2*log(x)		Two Term Intercept
148	a+b*x^2+c*x^2.5		Two Term Intercept
149	a+b*x^2+c*x^3		Two Term Intercept
150	a+b*x^2+c*exp(x)		Two Term Intercept
151	a+b*x^2+c*x^.5*log(x)		Two Term Intercept
152	a+b*x^2+c*log(x)^2		Two Term Intercept
153	a+b*x^2+c*x/log(x)		Two Term Intercept
154	a+b*x^2+c*x^.5		Two Term Intercept
155	a+b*x^2+c*log(x)		Two Term Intercept
156	a+b*x^2+c/log(x)		Two Term Intercept
157	a+b*x^2+c/x^.5		Two Term Intercept
158	a+b*x^2+c*log(x)/x		Two Term Intercept
159	a+b*x^2+c/x		Two Term Intercept
160	a+b*x^2+c/x^1.5		Two Term Intercept
161	a+b*x^2+c*log(x)/x^2		Two Term Intercept
162	a+b*x^2+c/x^2		Two Term Intercept
163	a+b*x^2+c*exp(-x)		Two Term Intercept
164	a+b*x^2*log(x)+c*x^2.5		Two Term Intercept
165	a+b*x^2*log(x)+c*x^3		Two Term Intercept
166	a+b*x^2*log(x)+c*exp(x)		Two Term Intercept
167	a+b*x^2*log(x)+c*x^.5*log(x)		Two Term Intercept
168	a+b*x^2*log(x)+c*log(x)^2		Two Term Intercept
169	a+b*x^2*log(x)+c*x/log(x)		Two Term Intercept
170	a+b*x^2*log(x)+c*x^.5		Two Term Intercept
171	a+b*x^2*log(x)+c*log(x)		Two Term Intercept
172	a+b*x^2*log(x)+c/log(x)		Two Term Intercept
173	a+b*x^2*log(x)+c/x^.5		Two Term Intercept
174	a+b*x^2*log(x)+c*log(x)/x		Two Term Intercept
175	a+b*x^2*log(x)+c/x		Two Term Intercept
176	a+b*x^2*log(x)+c/x^1.5		Two Term Intercept
177	a+b*x^2*log(x)+c*log(x)/x^2		Two Term Intercept
178	a+b*x^2*log(x)+c/x^2		Two Term Intercept
179	a+b*x^2*log(x)+c*exp(-x)		Two Term Intercept

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Model Number	Formula	Model Name	Group Name
180	a+b*x^2.5+c*x^3		Two Term Intercept
181	a+b*x^2.5+c*exp(x)		Two Term Intercept
182	a+b*x^2.5+c*x^.5*log(x)		Two Term Intercept
183	a+b*x^2.5+c*log(x)^2		Two Term Intercept
184	a+b*x^2.5+c*x/log(x)		Two Term Intercept
185	a+b*x^2.5+c*x^.5		Two Term Intercept
186	a+b*x^2.5+c*log(x)		Two Term Intercept
187	a+b*x^2.5+c/log(x)		Two Term Intercept
188	a+b*x^2.5+c/x^.5		Two Term Intercept
189	a+b*x^2.5+c*log(x)/x		Two Term Intercept
190	a+b*x^2.5+c/x		Two Term Intercept
191	a+b*x^2.5+c/x^1.5		Two Term Intercept
192	a+b*x^2.5+c*log(x)/x^2		Two Term Intercept
193	a+b*x^2.5+c/x^2		Two Term Intercept
194	a+b*x^2.5+c*exp(-x)		Two Term Intercept
195	a+b*x^3+c*exp(x)		Two Term Intercept
196	a+b*x^3+c*x^.5*log(x)		Two Term Intercept
197	a+b*x^3+c*log(x)^2		Two Term Intercept
198	a+b*x^3+c*x/log(x)		Two Term Intercept
199	a+b*x^3+c*x^.5		Two Term Intercept
200	a+b*x^3+c*log(x)		Two Term Intercept
201	a+b*x^3+c/log(x)		Two Term Intercept
202	a+b*x^3+c/x^.5		Two Term Intercept
203	a+b*x^3+c*log(x)/x		Two Term Intercept
204	a+b*x^3+c/x		Two Term Intercept
205	a+b*x^3+c/x^1.5		Two Term Intercept
206	a+b*x^3+c*log(x)/x^2		Two Term Intercept
207	a+b*x^3+c/x^2		Two Term Intercept
208	a+b*x^3+c*exp(-x)		Two Term Intercept
209	a+b*exp(x)+c*x^.5*log(x)		Two Term Intercept
210	a+b*exp(x)+c*log(x)^2		Two Term Intercept
211	a+b*exp(x)+c*x/log(x)		Two Term Intercept
212	a+b*exp(x)+c*x^.5		Two Term Intercept
213	a+b*exp(x)+c*log(x)		Two Term Intercept
214	a+b*exp(x)+c/log(x)		Two Term Intercept
215	a+b*exp(x)+c/x^.5		Two Term Intercept
216	a+b*exp(x)+c*log(x)/x		Two Term Intercept
217	a+b*exp(x)+c/x		Two Term Intercept
218	a+b*exp(x)+c/x^1.5		Two Term Intercept
219	a+b*exp(x)+c*log(x)/x^2		Two Term Intercept
220	a+b*exp(x)+c/x^2		Two Term Intercept
221	a+b*exp(x)+c*exp(-x)		Two Term Intercept
222	a+b*x^.5*log(x)+c*log(x)^2		Two Term Intercept
223	a+b*x^.5*log(x)+c*x/log(x)		Two Term Intercept

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Model Number	Formula	Model Name	Group Name
224	a+b*x^.5*log(x)+c*x^.5		Two Term Intercept
225	a+b*x^.5*log(x)+c*log(x)		Two Term Intercept
226	a+b*x^.5*log(x)+c/log(x)		Two Term Intercept
227	a+b*x^.5*log(x)+c/x^.5		Two Term Intercept
228	a+b*x^.5*log(x)+c*log(x)/x		Two Term Intercept
229	a+b*x^.5*log(x)+c/x		Two Term Intercept
230	a+b*x^.5*log(x)+c/x^1.5		Two Term Intercept
231	a+b*x^.5*log(x)+c*log(x)/x^2		Two Term Intercept
232	a+b*x^.5*log(x)+c/x^2		Two Term Intercept
233	a+b*x^.5*log(x)+c*exp(-x)		Two Term Intercept
234	a+b*log(x)^2+c*x/log(x)		Two Term Intercept
235	a+b*log(x)^2+c*x^.5		Two Term Intercept
236	a+b*log(x)^2+c*log(x)		Two Term Intercept
237	a+b*log(x)^2+c/log(x)		Two Term Intercept
238	a+b*log(x)^2+c/x^.5		Two Term Intercept
239	a+b*log(x)^2+c*log(x)/x		Two Term Intercept
240	a+b*log(x)^2+c/x		Two Term Intercept
241	a+b*log(x)^2+c/x^1.5		Two Term Intercept
242	a+b*log(x)^2+c*log(x)/x^2		Two Term Intercept
243	a+b*log(x)^2+c/x^2		Two Term Intercept
244	a+b*log(x)^2+c*exp(-x)		Two Term Intercept
245	a+b*x/log(x)+c*x^.5		Two Term Intercept
246	a+b*x/log(x)+c*log(x)		Two Term Intercept
247	a+b*x/log(x)+c/log(x)		Two Term Intercept
248	a+b*x/log(x)+c/x^.5		Two Term Intercept
249	a+b*x/log(x)+c*log(x)/x		Two Term Intercept
250	a+b*x/log(x)+c/x		Two Term Intercept
251	a+b*x/log(x)+c/x^1.5		Two Term Intercept
252	a+b*x/log(x)+c*log(x)/x^2		Two Term Intercept
253	a+b*x/log(x)+c/x^2		Two Term Intercept
254	a+b*x/log(x)+c*exp(-x)		Two Term Intercept
255	a+b*x^.5+c*log(x)		Two Term Intercept
256	a+b*x^.5+c/log(x)		Two Term Intercept
257	a+b*x^.5+c/x^.5		Two Term Intercept
258	a+b*x^.5+c*log(x)/x		Two Term Intercept
259	a+b*x^.5+c/x		Two Term Intercept
260	a+b*x^.5+c/x^1.5		Two Term Intercept
261	a+b*x^.5+c*log(x)/x^2		Two Term Intercept
262	a+b*x^.5+c/x^2		Two Term Intercept
263	a+b*x^.5+c*exp(-x)		Two Term Intercept
264	a+b*log(x)+c/log(x)		Two Term Intercept
265	a+b*log(x)+c/x^.5		Two Term Intercept
266	a+b*log(x)+c*log(x)/x		Two Term Intercept
267	a+b*log(x)+c/x		Two Term Intercept

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Model Number	Formula	Model Name	Group Name
268	a+b*log(x)+c/x^1.5		Two Term Intercept
269	a+b*log(x)+c*log(x)/x^2		Two Term Intercept
270	a+b*log(x)+c/x^2		Two Term Intercept
271	a+b*log(x)+c*exp(-x)		Two Term Intercept
272	a+b/log(x)+c/x^.5		Two Term Intercept
273	a+b/log(x)+c*log(x)/x		Two Term Intercept
274	a+b/log(x)+c/x		Two Term Intercept
275	a+b/log(x)+c/x^1.5		Two Term Intercept
276	a+b/log(x)+c*log(x)/x^2		Two Term Intercept
277	a+b/log(x)+c/x^2		Two Term Intercept
278	a+b/log(x)+c*exp(-x)		Two Term Intercept
279	a+b/x^.5+c*log(x)/x		Two Term Intercept
280	a+b/x^.5+c/x		Two Term Intercept
281	a+b/x^.5+c/x^1.5		Two Term Intercept
282	a+b/x^.5+c*log(x)/x^2		Two Term Intercept
283	a+b/x^.5+c/x^2		Two Term Intercept
284	a+b/x^.5+c*exp(-x)		Two Term Intercept
285	a+b*log(x)/x+c/x		Two Term Intercept
286	a+b*log(x)/x+c/x^1.5		Two Term Intercept
287	a+b*log(x)/x+c*log(x)/x^2		Two Term Intercept
288	a+b*log(x)/x+c/x^2		Two Term Intercept
289	a+b*log(x)/x+c*exp(-x)		Two Term Intercept
290	a+b/x+c/x^1.5		Two Term Intercept
291	a+b/x+c*log(x)/x^2		Two Term Intercept
292	a+b/x+c*exp(-x)		Two Term Intercept
293	a+b/x^1.5+c*log(x)/x^2		Two Term Intercept
294	a+b/x^1.5+c/x^2		Two Term Intercept
295	a+b/x^1.5+c*exp(-x)		Two Term Intercept
296	a+b*log(x)/x^2+c/x^2		Two Term Intercept
297	a+b*log(x)/x^2+c*exp(-x)		Two Term Intercept
298	a+b/x^2+c*exp(-x)		Two Term Intercept

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19 Interpolation Tool

The Interpolation Tool provides users with the ability to construct new data points within the range of a discrete set of known data points. The interpolation tool, accessed by right-clicking within the Datasheet, is a graphical curve fitting feature using spline interpolation to perform functional interpolation operations.

Spline interpolation divides the selected data range into small subintervals and each of these is interpolated using the third-degree polynomial. DataSight's Interpolation tool provides the following Spline types: linear spline, cubic spline and Akima spline.

Spline type	Description
Linear spline	The linear spline simply involves forming consecutive data through straight lines, using existing (known) data points.
Cubic spline	A cubic spline curve is a piecewise continuous curve, passing through each of the known values. The resulting curve includes a separate cubic polynomial for each interval, with matching first and second derivatives at the supplied data-points.
Akima spline	The Akima method is also based on piecewise polynomials. The Akima spline is less affected by outlying data points.

19.1 Interpolation Tool

The Interpolation Tool is accessed from within the Datasheet area of DataSight.

1. Users should ensure the variables they wish to review are checked in the Field List and visible within the datasheet.
2. The Interpolation tool will apply any filters selected in the filter panel and only display data that applies to the filter.
3. *Right-click* your mouse in the Datasheet window and select Interpolations.
4. The Interpolation Tool will open.

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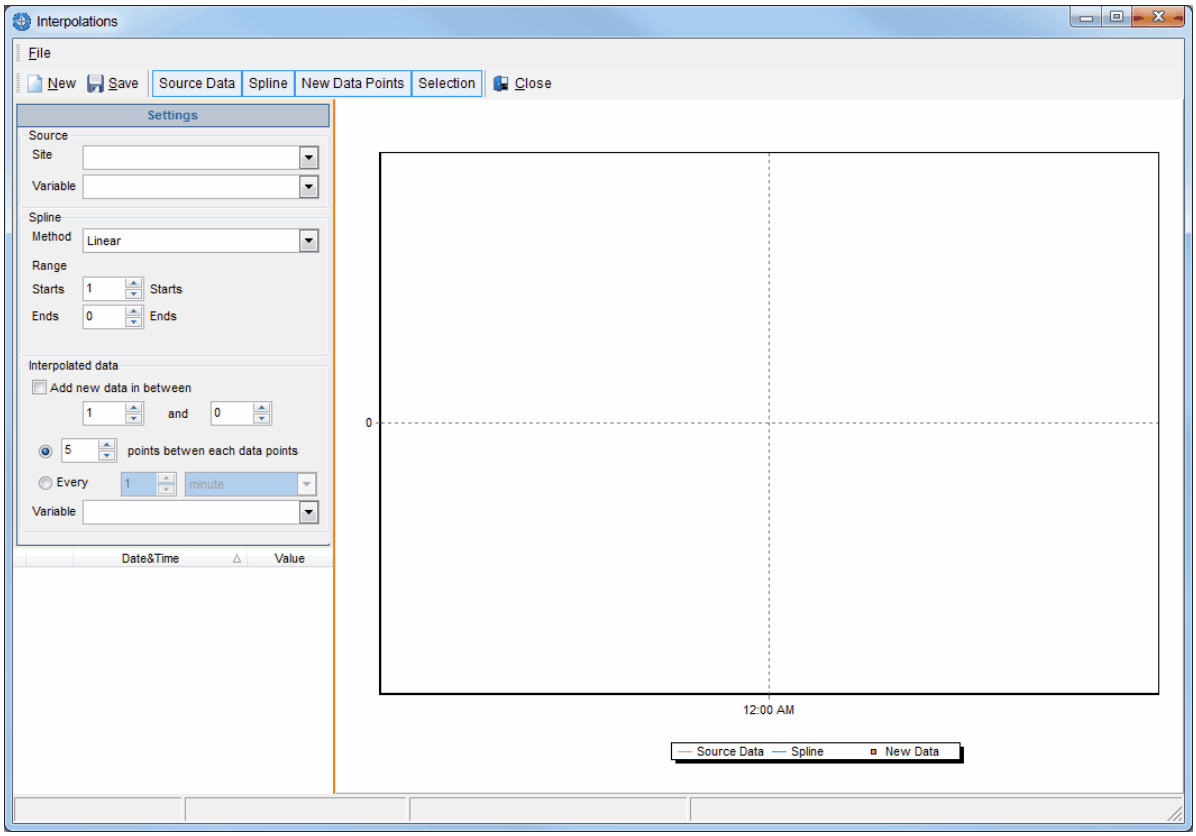

Within the Interpolation Tool:

1. Select the Site for the data you wish to review. (This list is limited to the sites currently viewed in the Datasheet).
2. Select the Variable to be used in the interpolation. Once selected, the data will be displayed in the graphing area to the right.
3. Select the Interpolation method (Linear, Cubic or Akima).
4. Using either the Data **Starts** and **Ends** display or by selecting points within the graphing window you can select the data start and end points for the interpolation to occur. **Left-click** your mouse to select the **start** point, **right-click** to define the **end** point.

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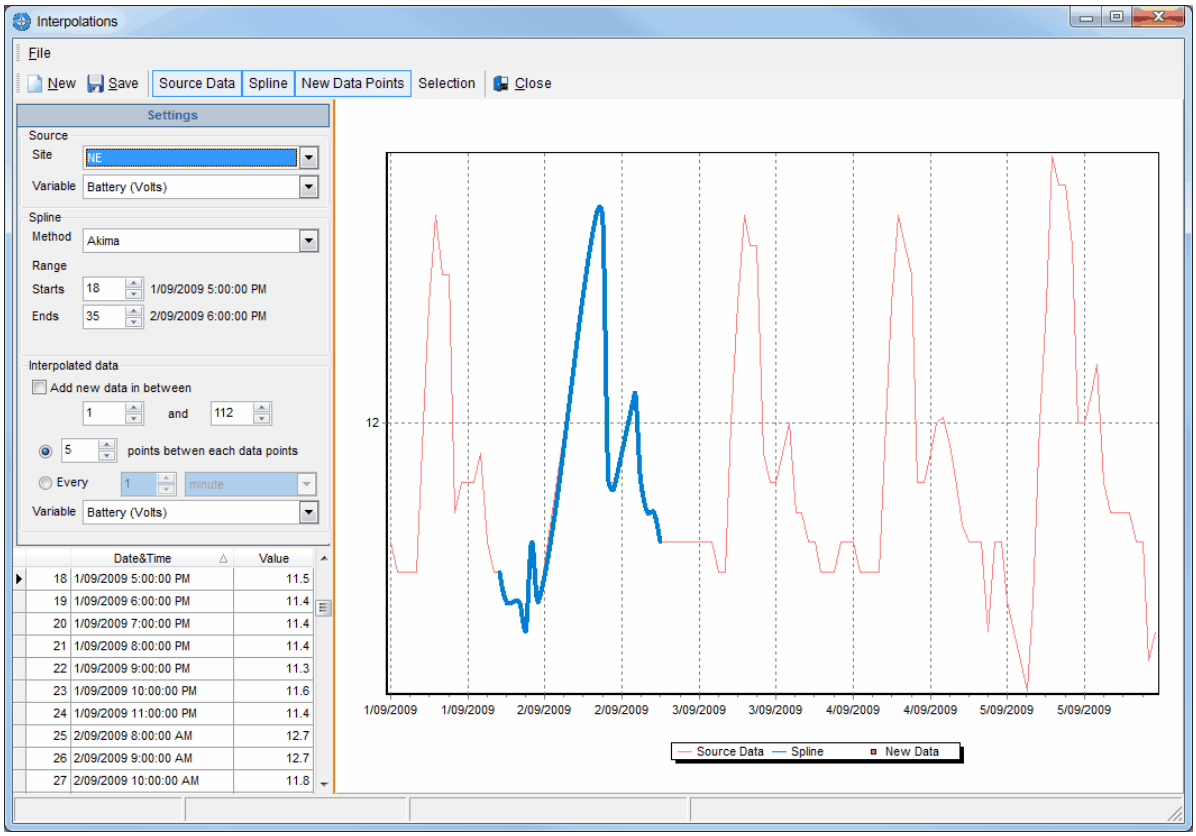

Interpolated data

5. Enter the existing data points between which you wish to create new data points.
6. The user can define the points to be created by the interpolation tool

    a) enter the number of points to create between each existing data point.

    b) enter the number of points to be created within a nominated time interval (second, minute, hour, day, month or year) within the selected range of data. For example, Every 15 minutes.
7. Once these options have been entered the points will be displayed within the graphing area of the Interpolation Tool. This can be seen as the red data points in the graph above.
8. The user can elect to output newly created points to the original variable or another variable in the database. The default variable is the same as the source data. In the example above, this is Battery (Volts).
9. When you are satisfied with the interpolation and to create new points in the database press the Save button. Please note, where existing data with the same date and time as the new data points exist it will be overwritten with the interpolated figure.

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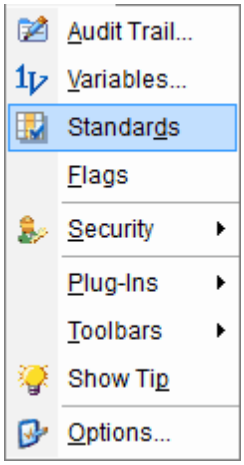
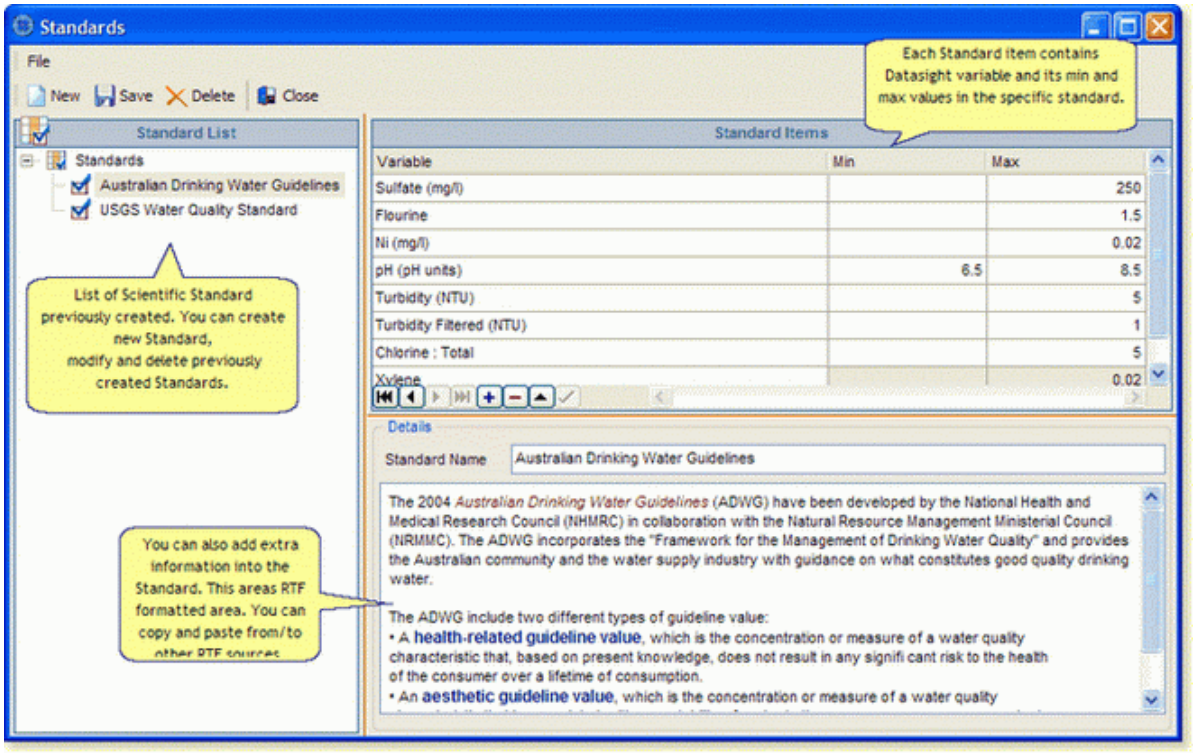
20 Scientific Standards

Scientific Standards in DataSight can be used to check and control the data entered for specific variables within a database against certain specified Scientific Standards.

20.1 Scientific Standards Introduction

Standards are accessed by selecting 'Standards' from 'Settings' main menu.




Standards
File
New
Save
Delete
Close
Each Standard item contains Datasight variable and its min and max values in the specific standard.
Standard List
Standards
Australian Drinking Water Guidelines
USGS Water Quality Standard
List of Scientific Standard previously created. You can create new Standard, modify and delete previously created Standards.
Standard Items
Variable
Min
Max
Sulfate (mg/l) 250
Flourine 1.5
Ni (mg/l) 0.02
pH (pH units) 6.5 8.5
Turbidity (NTU) 5
Turbidity Filtered (NTU) 1
Chlorine : Total 5
Xylene 0.02
Details
Standard Name
Australian Drinking Water Guidelines
The 2004 Australian Drinking Water Guidelines (ADWG) have been developed by the National Health and Medical Research Council (NHMRC) in collaboration with the Natural Resource Management Ministerial Council (NRMMC). The ADWG incorporates the "Framework for the Management of Drinking Water Quality" and provides the Australian community and the water supply industry with guidance on what constitutes good quality drinking water.
The ADWG include two different types of guideline value:
• A health-related guideline value, which is the concentration or measure of a water quality characteristic that, based on present knowledge, does not result in any signifi cant risk to the health of the consumer over a lifetime of consumption.
• An aesthetic guideline value, which is the concentration or measure of a water quality
You can also add extra information into the Standard. This areas RTF formatted area. You can copy and paste from/to

Use the menu items to create a **New** Standard and to **Save** and **Delete** existing Standards.

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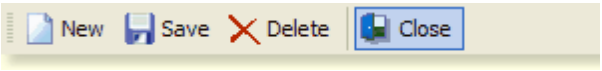
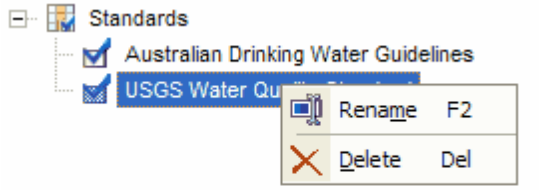


You can also **Rename** and **Delete** standard w ith the right click menu items.

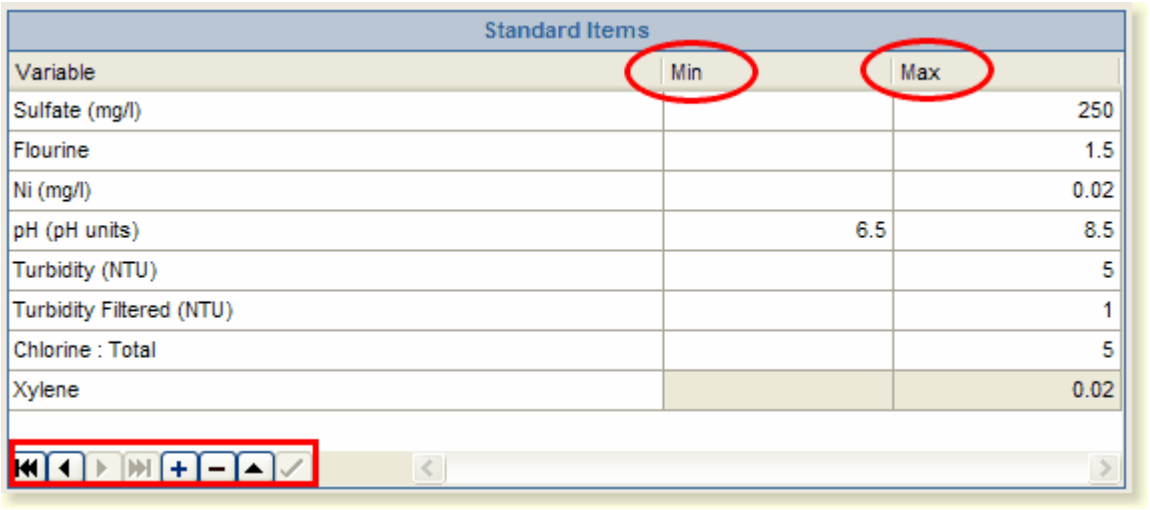


Standard Items

Each Standard Item consists of a Variable and it's Minimum and Maximum values to be applied in the specific standard.

Users can add any number of variables into the Standard. The navigation menu can be used to add, delete and submit standard items.

Each standard item has tw o values, Min and Max. These can both be blank. If this is the case, the standard item is ignored in all the Standard processes, such as Datasheet analysis and during Import.



Standard Items

Variable	Min	Max
Sulfate (mg/l)		250
Flourine		1.5
Ni (mg/l)		0.02
pH (pH units)	6.5	8.5
Turbidity (NTU)		5
Turbidity Filtered (NTU)		1
Chlorine : Total		5
Xylene		0.02

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20.2 Using Scientific Standards

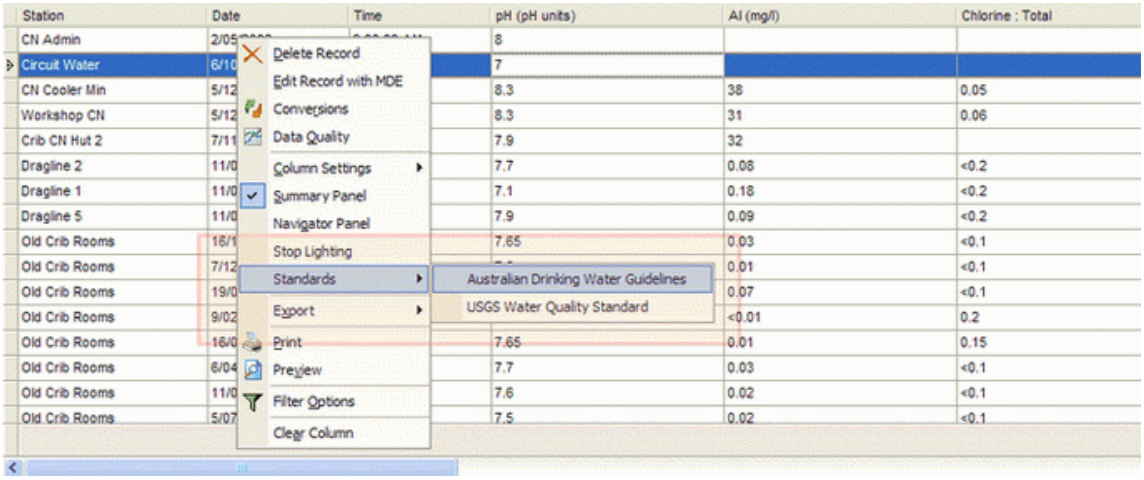
Standards can be used in several places in DataSight.

- Data analysis
- Tabular Reports
- Import

How to use Standards in the Datasheet for data analysis.

When you create a Standard using Standard interface it will be available on the Datasheet by right-clicking on the data and selecting **Standards**. Standards within the Datasheet apply the use of Stop Lighting so the Datasheet allows you to visualise exceeding standard values in different colors. It uses the color schema associated with Stop Lighting.

Datasight will show you all the Standards you have created before on the right click menu of Datasheet.



After you select one of Standard you created, Datasheet will trace the data and will show the exceeding data different colors which are selected in Options.

You can see the one of the samples for Datasight variable pH.

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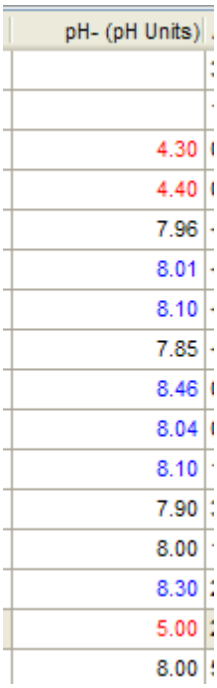

pH- (pH Units)
4.30
4.40
7.96
8.01
8.10
7.85
8.46
8.04
8.10
7.90
8.00
8.30
5.00
8.00

How to use Standards in the Tabular Reports

There are tw o special reports w hich are available through Tabular Report Wizard.

- Standards (Exceeding Data)
- Standards Summary

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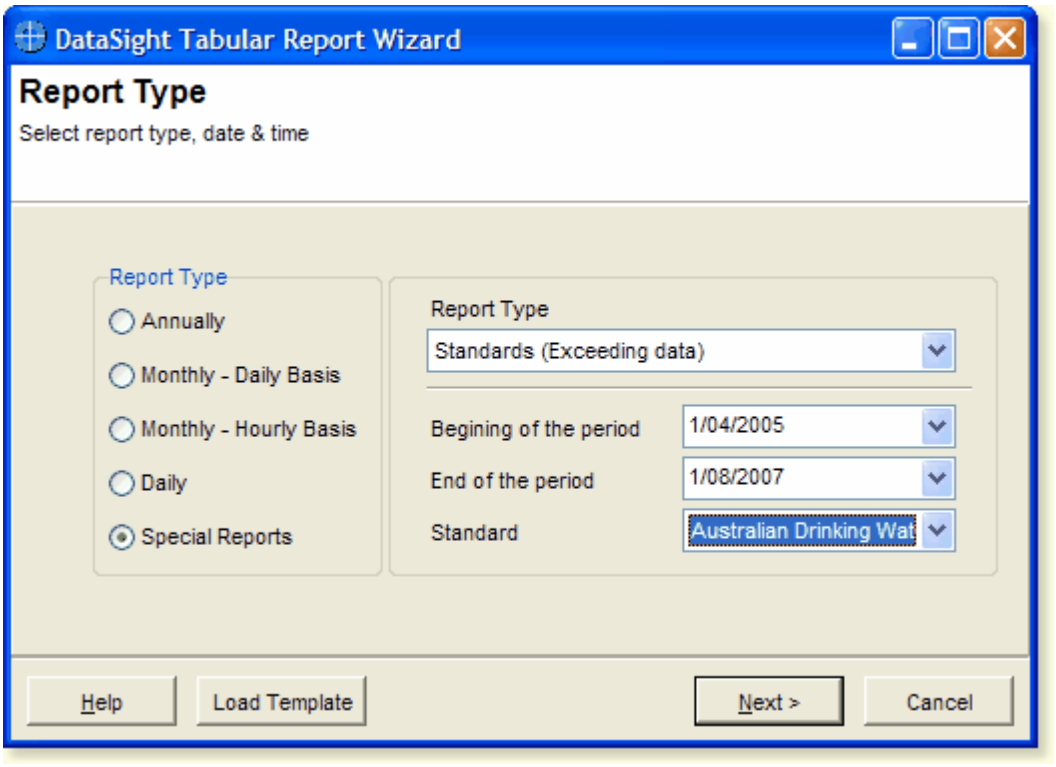

Standards (Exceeding Data) report is show every exceeding data for selected variable(s). A sample output of the report looks like this.

Scientific Standard Report

1/01/1999 - 1/01/2007

Variable :pH-
Standard :Australian Drinking Water Guidelines
Minimum :6.5
Maximum :8

Monitoring Date&Time		Value
Drinking Water, Crib East		
1/09/2003	9:00:00 AM	5.40
1/09/2003	10:50:00 AM	5.40
Drinking Water, Crib 3		
6/03/1999	9:00:00 AM	2.30
10/05/1999	9:00:00 AM	2.40
3/10/2000	9:00:00 AM	8.01
9/04/2001	9:00:02 AM	8.10
14/01/2002	9:00:06 AM	8.46
4/06/2002	9:00:12 AM	8.04
8/10/2002	9:00:43 AM	8.10
3/02/2003	9:00:48 AM	8.30
7/07/2003	10:40:00 AM	3.00
8/02/2005	9:00:00 AM	3.10
Drinking Water, Crib 7		
3/02/1999	9:00:00 AM	5.00
5/04/1999	9:00:00 AM	5.40
5/08/1999	9:00:00 AM	5.40

Monitoring Date&Time		Value
11/09/2000	9:00:00 AM	8.01
7/11/2000	9:00:00 AM	8.13
9/04/2001	9:00:02 AM	8.02
9/04/2001	9:00:03 AM	8.02
14/05/2001	9:00:00 AM	8.06
12/06/2001	9:00:00 AM	8.01
3/07/2001	9:00:00 AM	8.02
3/07/2001	9:00:01 AM	8.02
13/08/2001	9:00:01 AM	8.03
13/08/2001	9:00:02 AM	8.03
4/06/2002	9:00:11 AM	8.02
4/06/2002	9:00:12 AM	8.02
6/04/2004	9:00:11 AM	8.10
6/04/2004	9:11:00 AM	8.10
8/06/2004	7:00:00 AM	8.10
6/07/2004	7:00:00 AM	8.20
6/12/2004	3:09:33 PM	8.10
5/04/2005	7:00:00 AM	8.30
12/05/2005	9:00:00 AM	8.30
3/10/2005	9:00:00 AM	8.10
5/12/2005	9:00:00 AM	8.30

Standards Summary Report is very similar to Exceeding Data report. It will create a report displaying exceeding data and add statistical information to the end of each section.

A sample output of the Summary Report looks like this.

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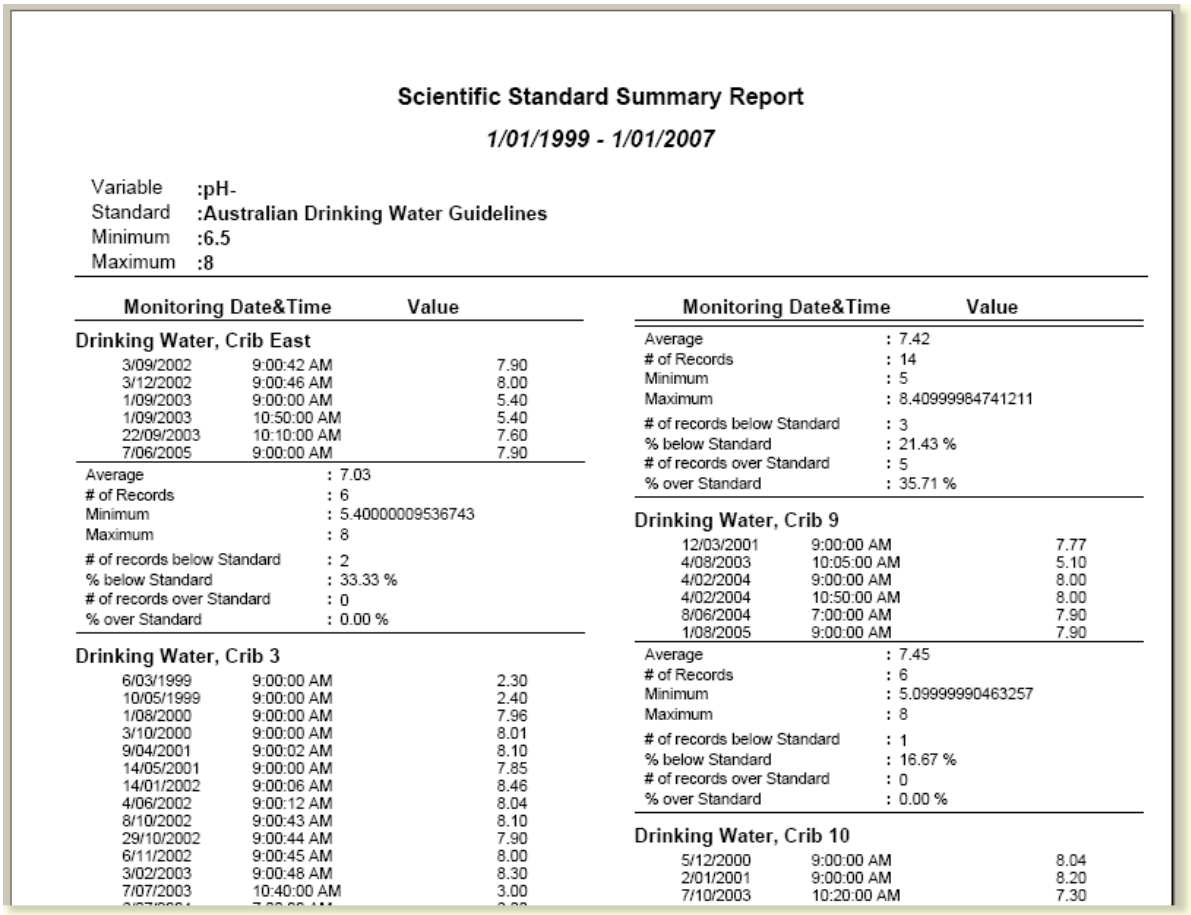

Scientific Standard Summary Report

1/01/1999 - 1/01/2007

Variable :pH-
Standard :Australian Drinking Water Guidelines
Minimum :6.5
Maximum :8

Drinking Water, Crib East

Monitoring Date&Time		Value
3/09/2002	9:00:42 AM	7.90
3/12/2002	9:00:46 AM	8.00
1/09/2003	9:00:00 AM	5.40
1/09/2003	10:50:00 AM	5.40
22/09/2003	10:10:00 AM	7.60
7/06/2005	9:00:00 AM	7.90

Average	: 7.03
# of Records	: 6
Minimum	: 5.40000009536743
Maximum	: 8
# of records below Standard	: 2
% below Standard	: 33.33 %
# of records over Standard	: 0
% over Standard	: 0.00 %

Drinking Water, Crib 3

Monitoring Date&Time		Value
6/03/1999	9:00:00 AM	2.30
10/05/1999	9:00:00 AM	2.40
1/08/2000	9:00:00 AM	7.96
3/10/2000	9:00:00 AM	8.01
9/04/2001	9:00:02 AM	8.10
14/05/2001	9:00:00 AM	7.85
14/01/2002	9:00:06 AM	8.46
4/06/2002	9:00:12 AM	8.04
8/10/2002	9:00:43 AM	8.10
29/10/2002	9:00:44 AM	7.90
6/11/2002	9:00:45 AM	8.00
3/02/2003	9:00:48 AM	8.30
7/07/2003	10:40:00 AM	3.00

Average	: 7.42
# of Records	: 14
Minimum	: 5
Maximum	: 8.40999984741211
# of records below Standard	: 3
% below Standard	: 21.43 %
# of records over Standard	: 5
% over Standard	: 35.71 %

Drinking Water, Crib 9

Monitoring Date&Time		Value
12/03/2001	9:00:00 AM	7.77
4/08/2003	10:05:00 AM	5.10
4/02/2004	9:00:00 AM	8.00
4/02/2004	10:50:00 AM	8.00
8/06/2004	7:00:00 AM	7.90
1/08/2005	9:00:00 AM	7.90

Average	: 7.45
# of Records	: 6
Minimum	: 5.09999990463257
Maximum	: 8
# of records below Standard	: 1
% below Standard	: 16.67 %
# of records over Standard	: 0
% over Standard	: 0.00 %

Drinking Water, Crib 10

Monitoring Date&Time		Value
5/12/2000	9:00:00 AM	8.04
2/01/2001	9:00:00 AM	8.20
7/10/2003	10:20:00 AM	7.30

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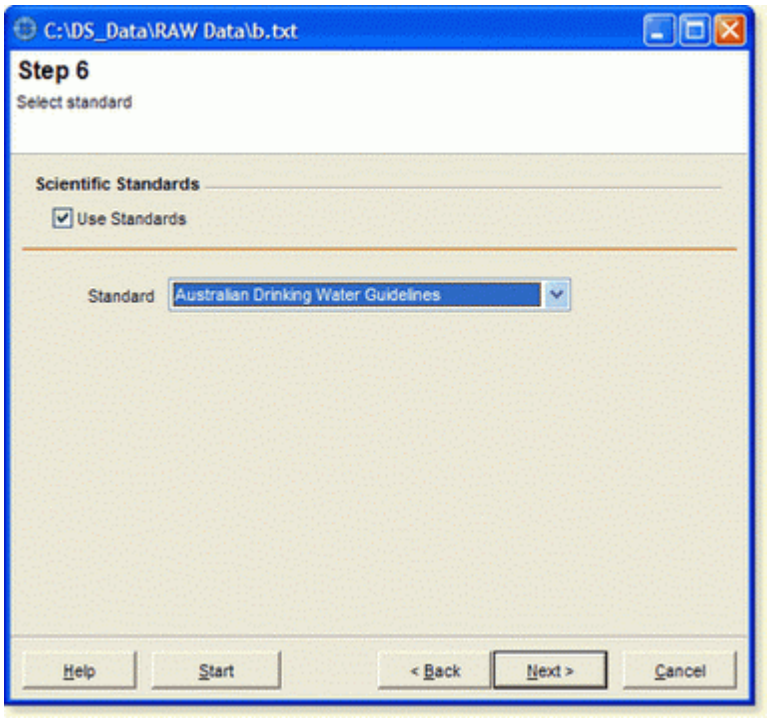
How to use Standards during Import

Users can also use standard in the Import to check whether imported data is in the standard limits or not. You can select which standard you would like to use in the during the Import process at the 6th Step of the Import Wizard.



You can see the result at the last step of the Import Wizard. If you finished the import all the Import Summary will be recorded into the related Station properties under the Import Audit Log section. *For example:*

Import:

Import Date&Time:Source File:*13/04/2009 11:14:01 AM*

Source File:*C:\Documents\Seveno\remote\mine\ground water.csv*

Number of lines in source file : *404*

Import starts from : *2*

Import finishes at : *25*

Levels:

Level 1 : *Remote Mine*

Level 2 : *Ground Water Monitoring*

Variables:

Sample Location (Field2) --> *Level 3*

Date (Field3) --> *Date*

Time (Field4) --> *Time*

Al27(MR) (Field5) --> *Aluminium Total (mg/l)*

Standards Check:

18/07/2007 9:00:00 AM The import value for Aluminium Total (mg/l) (2.05) is greater than Standard value (0.25).

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18/07/2007 9:00:00 AM The import value for Aluminium Total (mg/l) (9.88) is greater than Standard value (0.25).

17/08/2007 9:00:00 AM The import value for Aluminium Total (mg/l) (1.451) is greater than Standard value (0.25).

17/08/2007 9:00:00 AM The import value for Aluminium Total (mg/l) (0.3959) is greater than Standard value (0.25).

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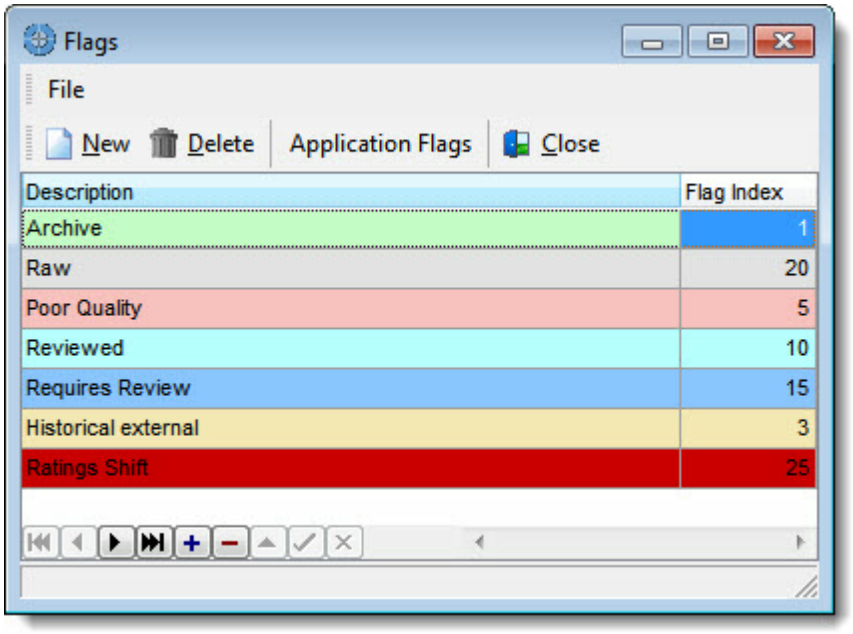
21 Flags

DataSight Flags can be used to assign and visually identify data for quality coding or quality assurance purposes. Flags are user-defined and database specific and can be used to clearly label data by colouring the row of data.

21.1 Setting Up Flags

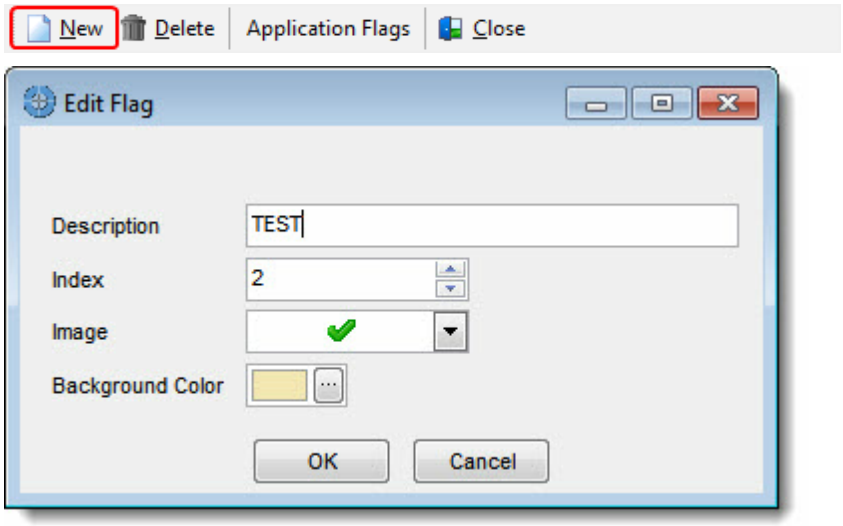
The user can access **Flags** via the **Settings** menu.



By default DataSight sets up several Flags for use within the database. The user can elect to edit these, or delete them to create their own user-defined flagging system.

Create a new Flag

1. To create a new flag, simply click the **New** button on the Flags toolbar.



2. Enter the flag **Description** in the blank space (this can be alphanumeric).

3. Select the **Index** number to assign to this flag. The Index is used to number flags and is useful when filtering data according to Flag index in the *Datasheet*.

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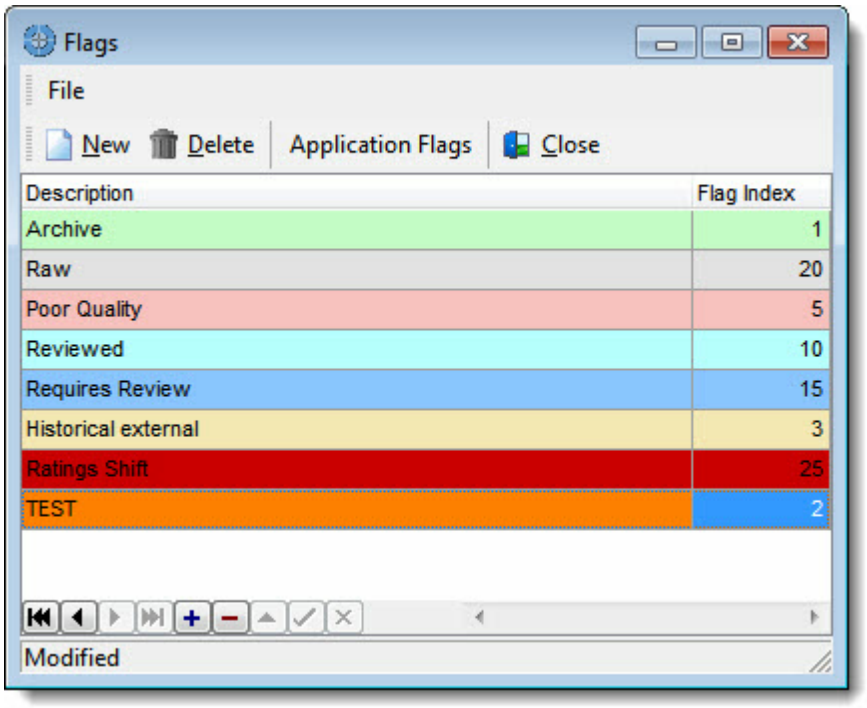
4. Select an appropriate **Image** from the drop-down menu. The image is simply a visually associated icon for the selected flag.

5. Assign a background **colour** to the flag. This colour is used to highlight flagged data in the *Datasheet*.

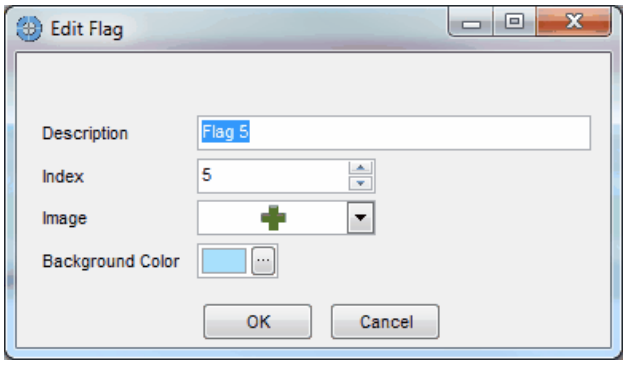
6. When you are satisfied with the selection, click **OK**. The new flag will be added to the list.



Edit a Flag

1. Double-click the flag you wish to edit and make the appropriate changes.

For example, from this:



to this:

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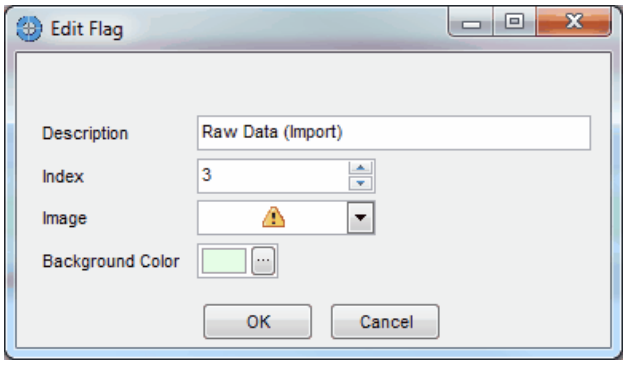
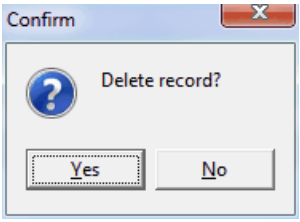


Delete a Flag

1. Select the flag you wish to delete and click the **Delete** button on the Flags toolbar.

2. You will be asked to confirm the delete request. Click **OK** if you are sure.



21.2 Application Flags

Flags can be assigned for automatic flagging to specific DataSight tasks:

- **Import**

Data that is imported will automatically be assigned this flag.

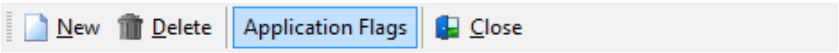
- **Conversion**

When using the conversion tool the calculated results, or converted data, will be assigned this flag

- **Archive/Read Only**

Data that is assigned with the Archive/Read Only flag will not be editable by any user. Administrator users, or those with appropriate DataSight permissions, will be able to assign/remove Archive/Ready Only flags.

1. To set these flags, select the **Application Flags** button in the Flags toolbar.



2. In the Flag Index column you can select an appropriate flag for each of the above application processes. For example, some selections are made below.

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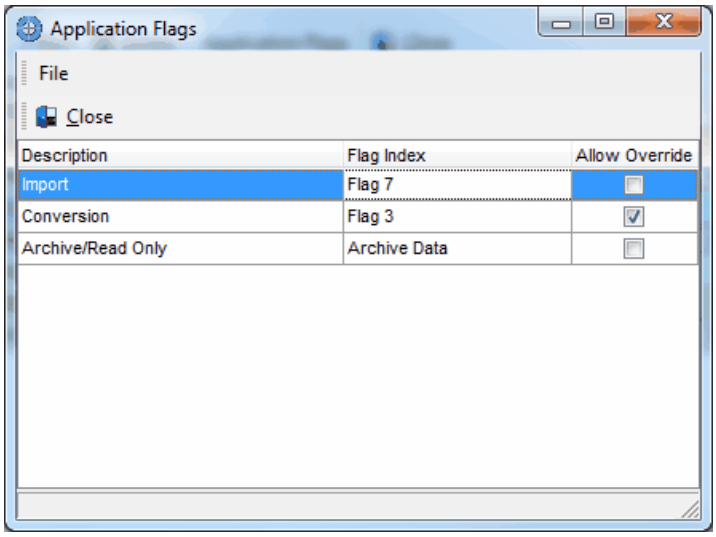

3. The Allow Override function is only applicable for the Conversion. If this option is selected, users are able to change the flag assigned to specific data using the conversion tool. For example, while completing a calculation the user may elect to flag current 'raw data' with an 'edited data' flag as it is modified in the Conversion Tool. If the box is unchecked, these changes will not be allowed. See Assigning Flags during Calcualtions for further details.

21.3 Using Flags

Flags can be assigned to data

- during import.
- within the Datasheet.
- during calculations in the Conversion Tool.
- with the graphical Data Quality interface.

Assigning Flags during Import

Users can set up a specific Import flag within the Application Flags interface. All data imported in to the database will then be assigned the selected flag.

21.3.1 Flags in the Datasheet

Assigning Flags within the Datasheet

When viewing data in the Datsheet simply select a row(s) of data, right-click and select to Set Flag. The Set Flag list is populated by the user-defined flags in the Settings menu (created by following the steps under Setting Up Flags).

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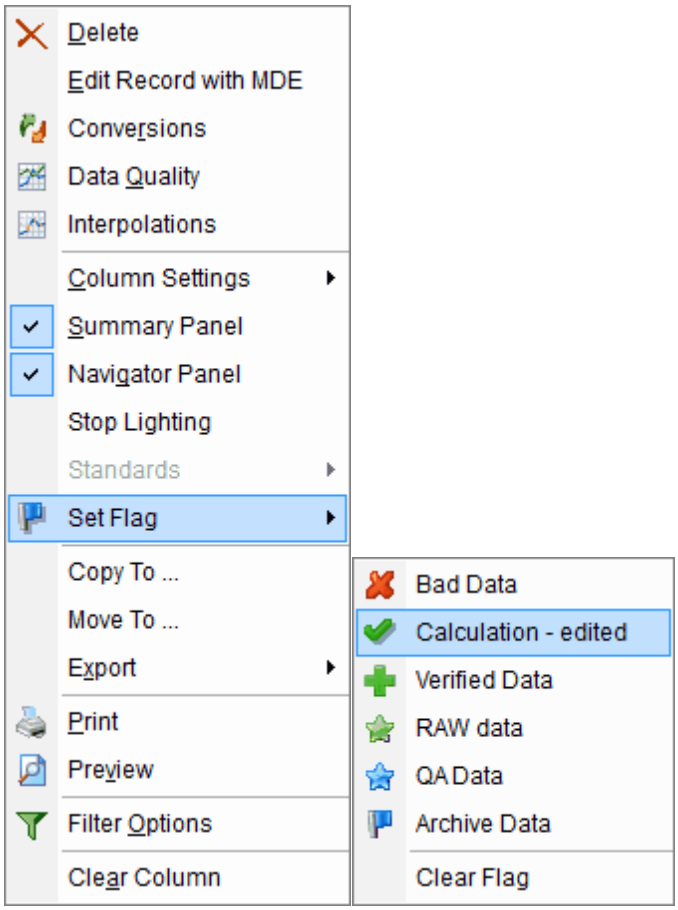

Data assigned with a flag will be coloured with the selected Flag colour. An example datasheet is shown below.

Station	Date	Time	ttery (Volts)	M10 (mg/m³)	M10 (mg/m³)	RHi (%)	erature (°C)	Dir Hr Av (°)	l Hr Av (m/s)
NE	1/09/2009	3:00:00 AM	11.5	0.03	0.06	43	9.9	2.93	0.02
NE	1/09/2009	4:00:00 AM	11.5	0.05	0.04	40	10.1	186.69	0.03
NE	1/09/2009	5:00:00 AM	12	0.03	0.08	31	15.7	218.39	0.26
NE	1/09/2009	6:00:00 AM	12.4	0.05	0.03	19	20.9	187.01	1.2
NE	1/09/2009	7:00:00 AM	12.7	0	0.1	12	25.5	157.86	1.85
NE	1/09/2009	8:00:00 AM	12.5	0.09	0	8	29.9	160.68	1.99
NE	1/09/2009	9:00:00 AM	12.5	0.01	0	12	29.3	89.92	1.46
NE	1/09/2009	10:00:00 AM	11.7	0.01	0.16	11	29.2	313.98	5.07
NE	1/09/2009	11:00:00 AM	11.8	0.04	0.06	13	28.2	293.61	6.66
NE	1/09/2009	12:00:00 PM	11.8	0.05	0.02	17	27.4	287.61	6.96
NE	1/09/2009	1:00:00 PM	11.8	0.02	0.11	12	29.6	286.16	7.68
NE	1/09/2009	2:00:00 PM	11.9	0.05	0.03	15	27.8	266.17	8.72
NE	1/09/2009	3:00:00 PM	11.6	0.04	0.03	14	26.5	269.77	8.78
NE	1/09/2009	4:00:00 PM	11.5	0.03	0	19	24.1	253.14	9.61
NE	1/09/2009	5:00:00 PM	11.5	0.02	0	23	22.7	249.76	7.93
NE	1/09/2009	6:00:00 PM	11.4	0.02	0.03	17	22.2	234.31	5.49
NE	1/09/2009	7:00:00 PM	11.4	0.01	0	15	21.1	222.10	5.28
NE	1/09/2009	8:00:00 PM	11.4	0.01	0.03	14	21.2	212.15	5.35
NE	1/09/2009	9:00:00 PM	11.3	0.02	0.03	15	20.1	203.97	6.64
NE	1/09/2009	10:00:00 PM	11.6	0.01	0.01	41	15	204.14	6.38
NE	1/09/2009	11:00:00 PM	11.4	0.02	0.02	45	13.7	168.29	2.02
NE	2/09/2009	12:00:00 AM		0.01	0	23	17.8	202.93	6.59
NE	2/09/2009	1:00:00 AM		0.01	0	25	17.2	192.41	7.28
NE	2/09/2009	2:00:00 AM		0.01	0.01	27	16.2	188.11	7.95
NE	2/09/2009	6:00:00 AM		0.03	0.02	17	21	182.89	7.79

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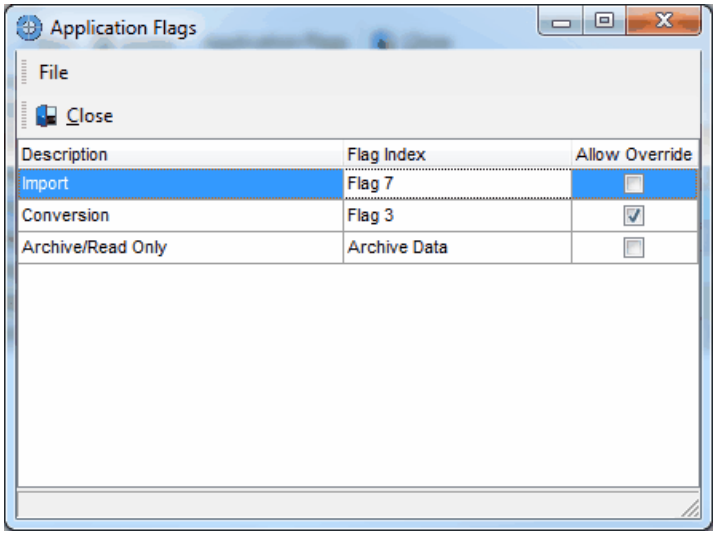
21.3.2 Flags in the Conversion Tool

Assigning Flags during Calculations

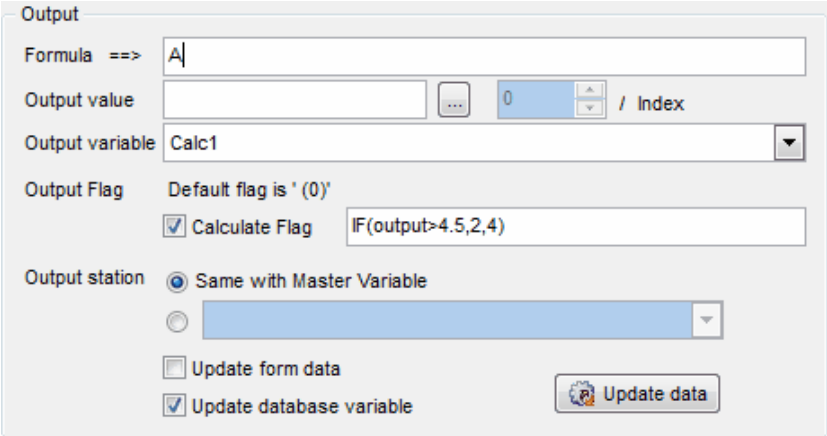
Where a flag is designated as a "conversion flag" in the Application Flags interface any output data in the conversion tool will be assigned this flag (Example 'Flag 3').



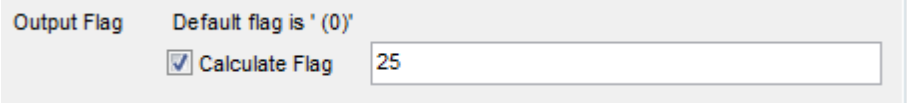
However, if the Conversion flag has the "Alow Override" function checked users are then able to change the flag assigned to specific data within the conversion tool.

For example, using the Flag Index number within the Conversion Tool the Output Flag can be calculated, rather than user defined, using an IF statement (or other condition statements).

In the example below, where the result of the calculation (*output*) is greater than 4.5 the data will be flagged 2, otherwise it will be flagged 4 - using the statement: **IF(output>4.5,2,4)**.



In another example, if the user wishes to simply flag the output data as an alternative flag to that assigned in the Application Flags area they can just enter the Flag Index number - see below:



21.3.3 Flags and Data Quality

Assigning Flags with the Data Quality tool

The Data Quality component within DataSight allows the user to quickly and visually assign flags to data points using the graphical interface.

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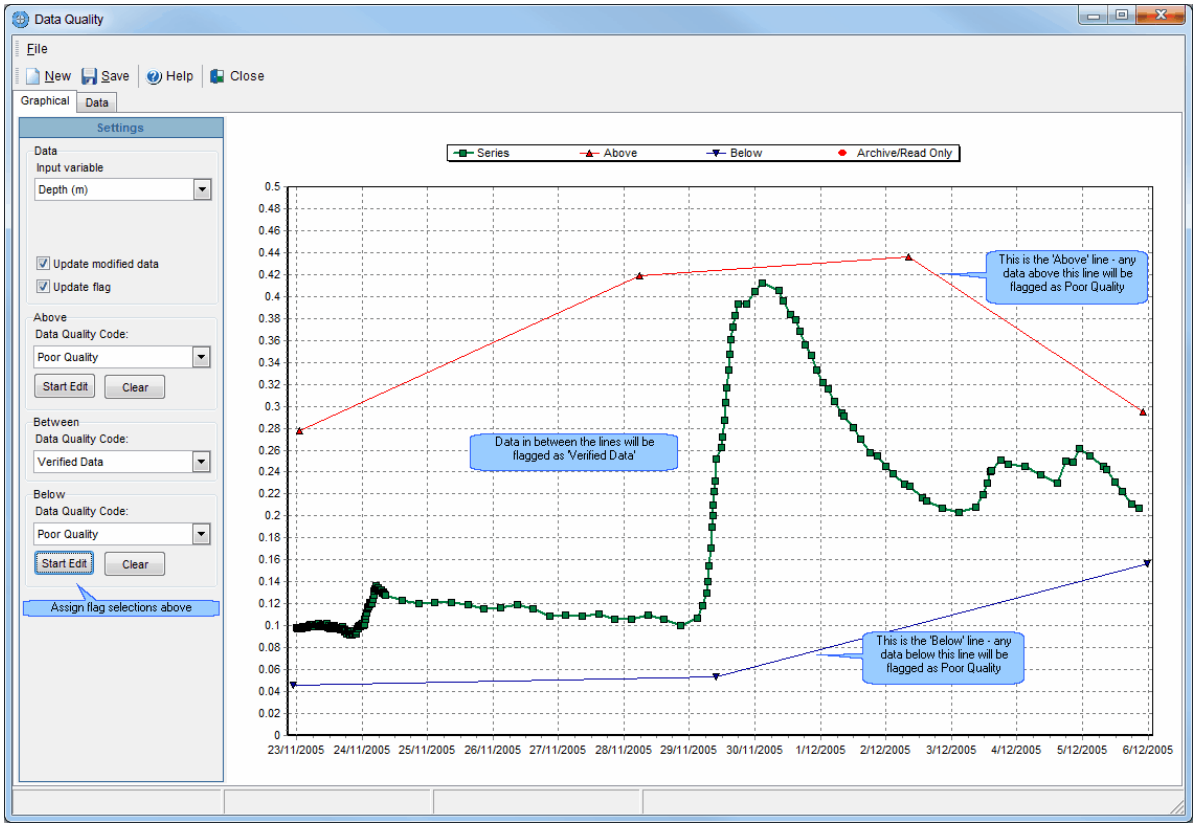
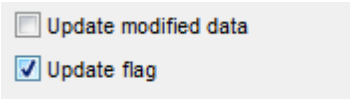
To edit data in the Data Quality interface:

1. Open the Datasheet and display the data they wish to review and flag.
2. Right-click on the datasheet and select **Data Quality**. The Data Quality window will open.



For example, in the image above depth measurements can be quickly identified and flagged as 'poor quality' or 'bad' data or flagged as data verified to be correct, etc.

- Use the Above and Below Start Edit buttons to create freehand lines to define the upper and lower limits for the selected dataset.
- Individual points can be edited - drag them up or down to a new value (The date and time will remain the same).
- Clicking Save will make the changes in the database - to any modified data and/or flags (depending on the check boxes selected).



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22 Gaugings

Gauging Calculator helps you store gauging measurements and get the Total Discharge, Total Area and Mean Velocity.

22.1 Gauging Calculator

The Gauging Calculator module is for storing your Stream Gauging Measurements and for calculation of the Total Discharge.

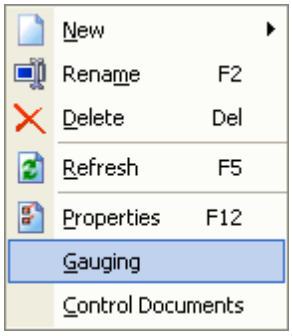
The calculation of the discharge from velocity and depth measurements can be made in several ways.

Mid section method uses averages of the mean velocities in the verticals and of the width of the sub divisions.

Mean section method uses the mean velocities and depths at the subdivision point.

DataSight Gaugings are related to the Level 3 in a DataSight database.

Each Level 3 item has it's own Gauging storage and can be accessible through right-click menu item at Level 3.



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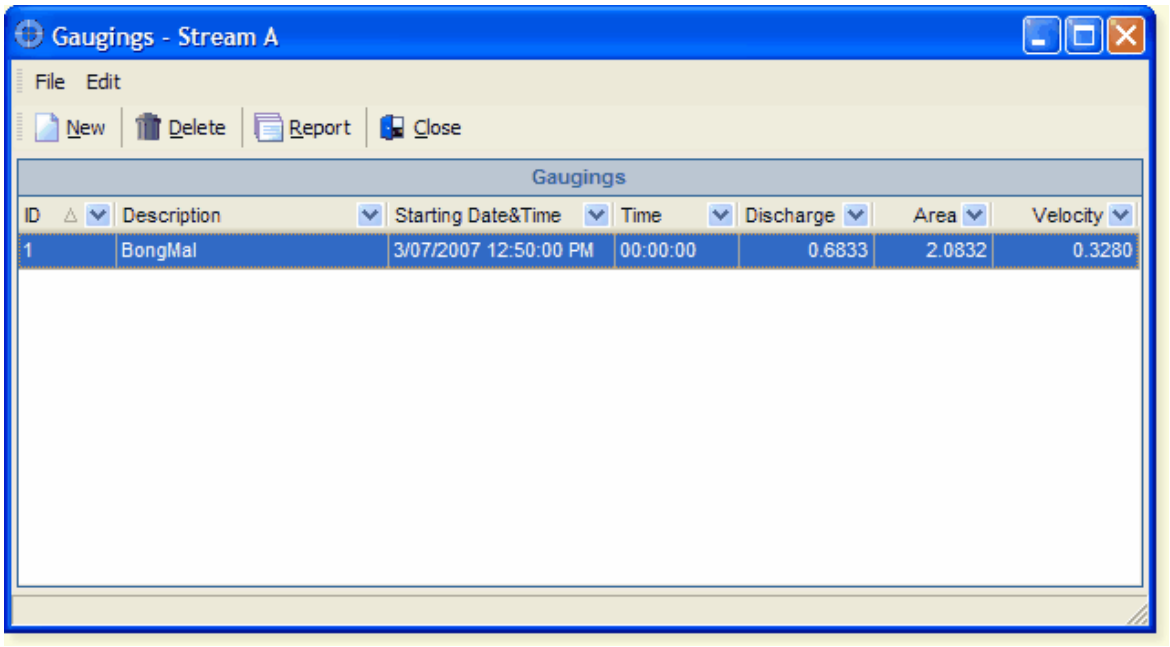
Gaugings - Stream A
File Edit
New Delete Report Close
Gaugings
ID Description Starting Date&Time Time Discharge Area Velocity
1 BongMal 3/07/2007 12:50:00 PM 00:00:00 0.6833 2.0832 0.3280

All the Gaugings related to the specific Level 3 User can be seen in the main gauging form. Main form shows Gauging list and some of the details for each gauging.

To create new Gauging click

New button. All the properties of the Gauging, including Description, Starting and Finishing Date and Time, Gauging Method and Starting Bank, can be changed.

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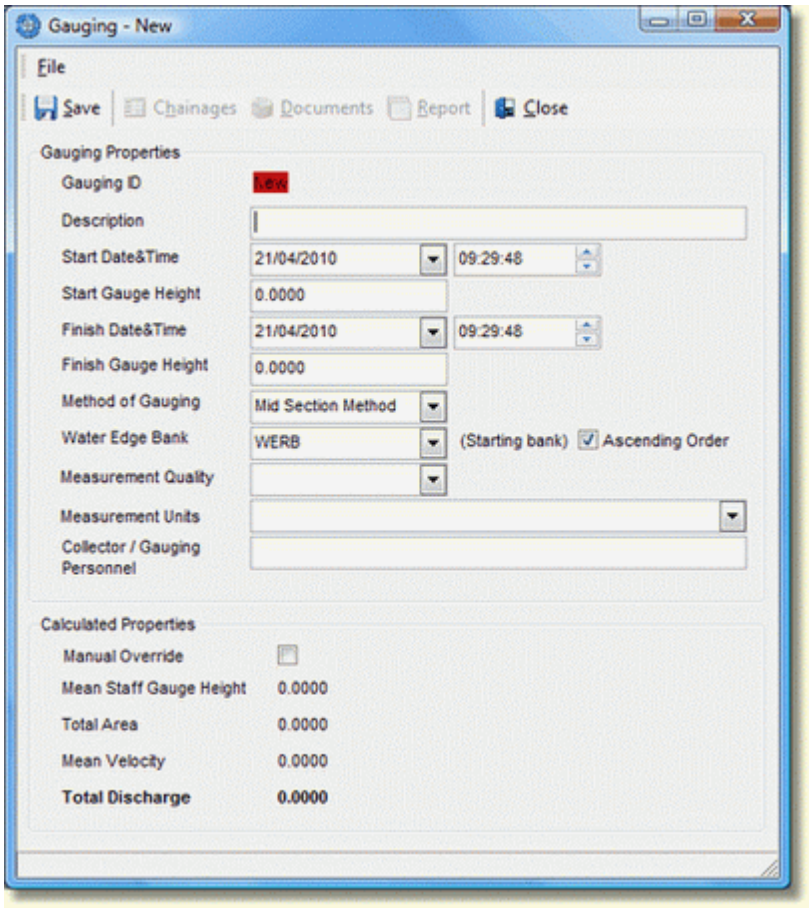
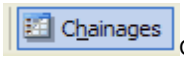


A new Gauging ID will be provided after saving the Gauging. Gauging ID's are automatically created by Datasight and cannot be edited or changed by the user and ID's for deleted Gaugings cannot be used again.

Calculated properties will show the values for *Mean Staff Gauge Height*, *Total Area*, *Mean Velocity* and *Total Discharge* for the Gauging. These values will be refreshed after adding or editing Chainage measurements and are displayed in the same measurement units as the data being entered. There is also an option to enter these values manually by clicking the **Manual Override** checkbox.

To add new chainages or edit chainages click 

Chainages button.

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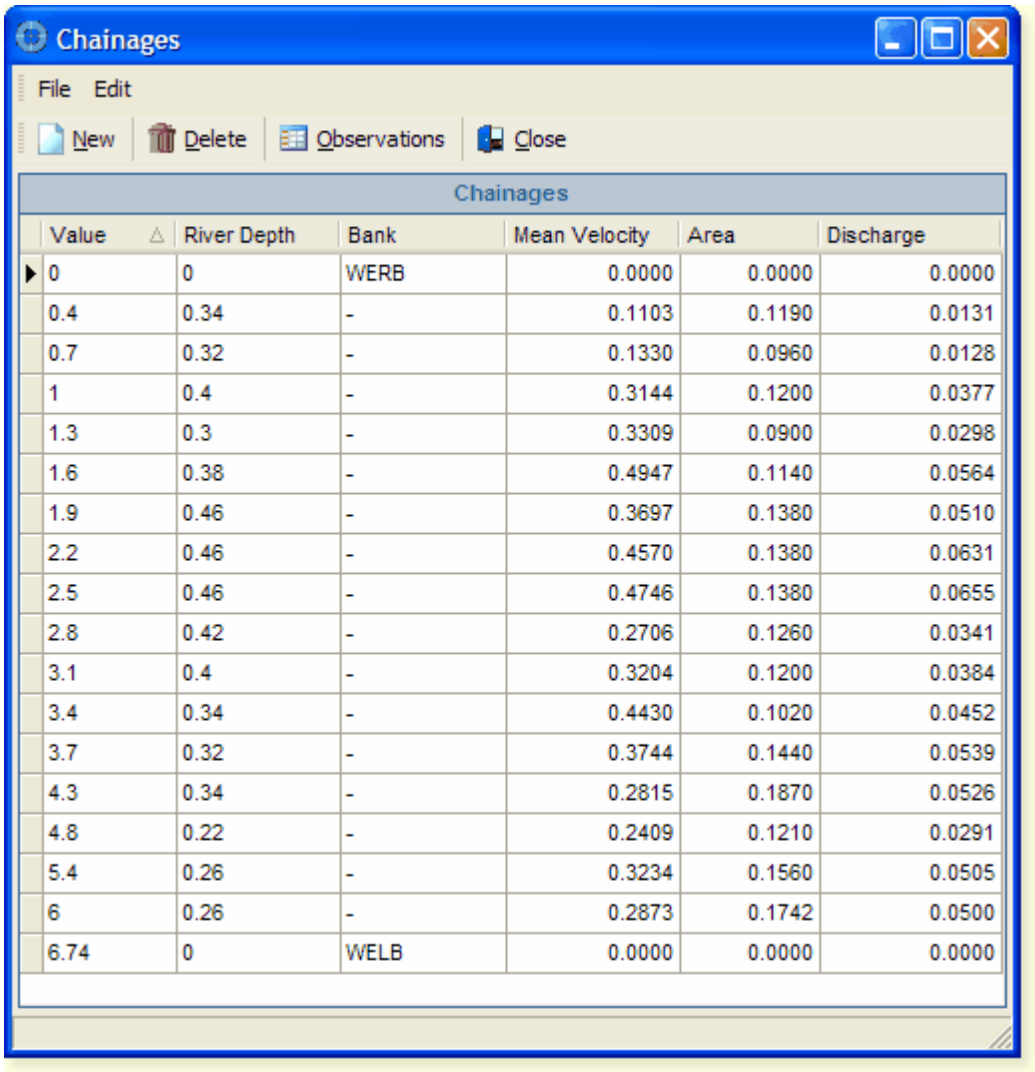

Chainages

Value	River Depth	Bank	Mean Velocity	Area	Discharge
0	0	WERB	0.0000	0.0000	0.0000
0.4	0.34	-	0.1103	0.1190	0.0131
0.7	0.32	-	0.1330	0.0960	0.0128
1	0.4	-	0.3144	0.1200	0.0377
1.3	0.3	-	0.3309	0.0900	0.0298
1.6	0.38	-	0.4947	0.1140	0.0564
1.9	0.46	-	0.3697	0.1380	0.0510
2.2	0.46	-	0.4570	0.1380	0.0631
2.5	0.46	-	0.4746	0.1380	0.0655
2.8	0.42	-	0.2706	0.1260	0.0341
3.1	0.4	-	0.3204	0.1200	0.0384
3.4	0.34	-	0.4430	0.1020	0.0452
3.7	0.32	-	0.3744	0.1440	0.0539
4.3	0.34	-	0.2815	0.1870	0.0526
4.8	0.22	-	0.2409	0.1210	0.0291
5.4	0.26	-	0.3234	0.1560	0.0505
6	0.26	-	0.2873	0.1742	0.0500
6.74	0	WELB	0.0000	0.0000	0.0000

All the chainages can be seen in the Chainages form.

To add new Chainage edit new button.

To edit the chainage double click on the chainage.

Chainages can be edited via Chainage details form.

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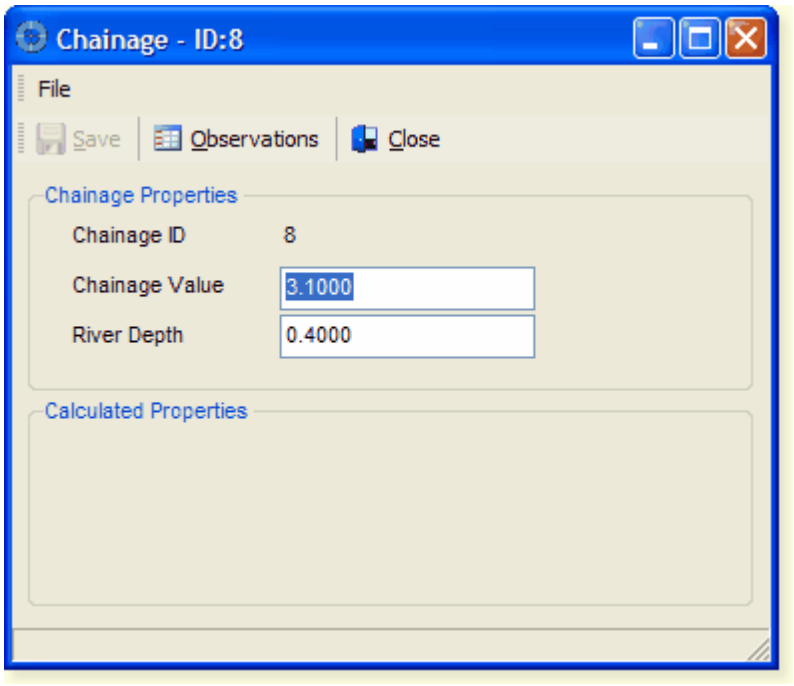
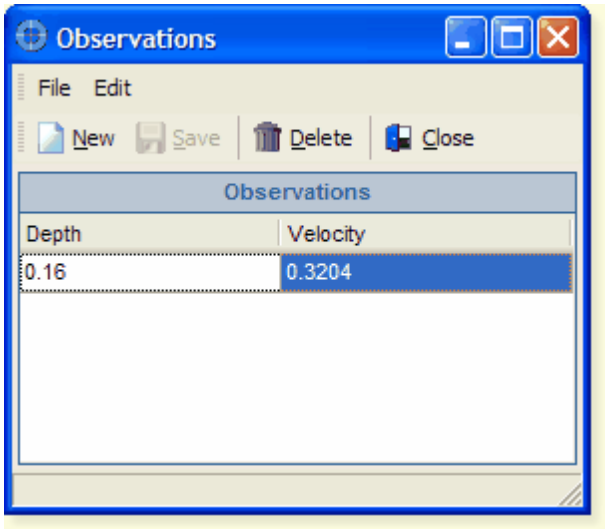


You can add multiple observations for each chainage through observations form.



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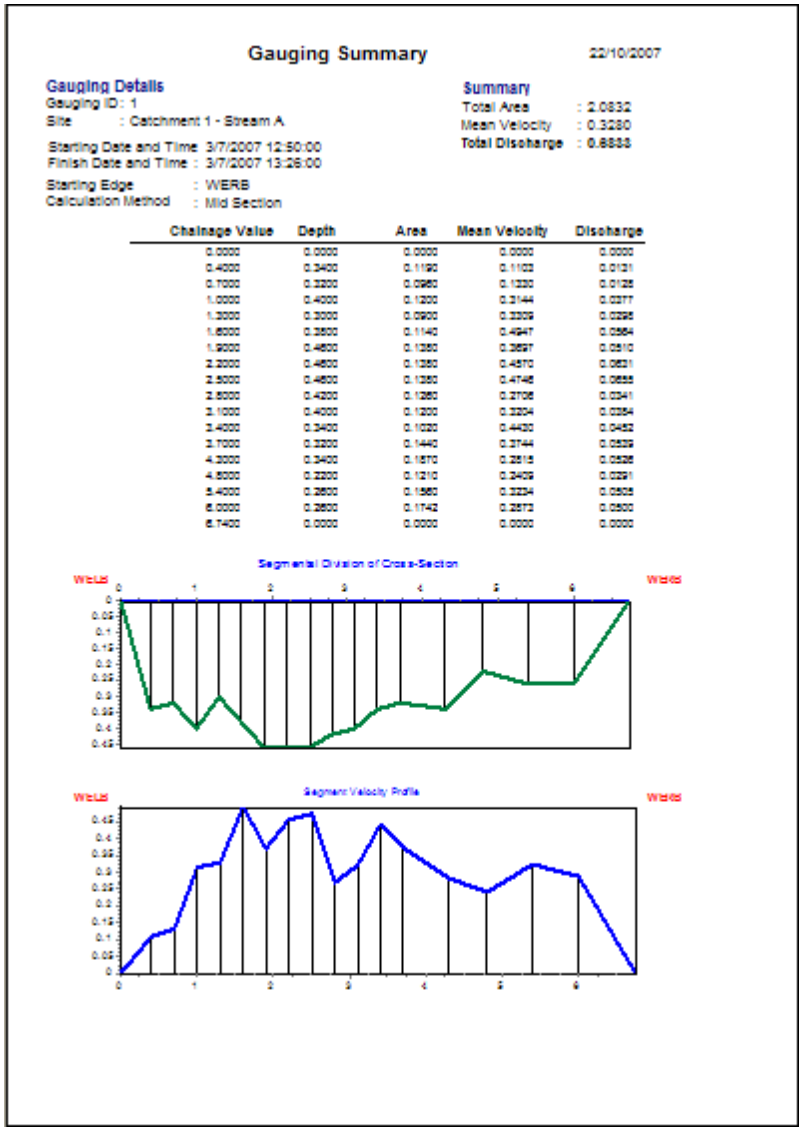
22.2 Gauging Reports

Gauging report provides summary information for each gauging, chainage details and graph for Segmental Division of Cross-Section and Segment Velocity Profile. These are created by clicking the **Reports** button from the Gauging window and selecting **Gauging Details** or **Gauging List**.

Here is the report layout of a sample gauging summary report, which is created by highlighting the gauging you wish to view and selecting **Reports**, **Gauging Details**.



Gauging Summary 22/10/2007

Gauging Details
Gauging ID : 1
Site : Catchment 1 - Stream A
Starting Date and Time 3/7/2007 12:50:00
Finish Date and Time : 3/7/2007 13:26:00
Starting Edge : WERB
Calculation Method : Mid Section

Summary
Total Area : 2.0832
Mean Velocity : 0.3280
Total Discharge : 0.6833

Chainage Value	Depth	Area	Mean Velocity	Discharge
0.0000	0.0000	0.0000	0.0000	0.0000
0.4000	0.3400	0.1192	0.1103	0.0131
0.7000	0.3200	0.0960	0.1330	0.0128
1.0000	0.4000	0.1200	0.2144	0.0377
1.3000	0.3000	0.0900	0.3309	0.0298
1.6000	0.3500	0.1140	0.4947	0.0564
1.9000	0.4600	0.1380	0.3697	0.0510
2.2000	0.4600	0.1380	0.4570	0.0631
2.5000	0.4600	0.1380	0.4746	0.0655
2.8000	0.4200	0.1260	0.2706	0.0341
3.1000	0.4000	0.1200	0.3204	0.0384
3.4000	0.3400	0.1020	0.4430	0.0452
3.7000	0.3200	0.1440	0.3744	0.0539
4.0000	0.3400	0.1870	0.2815	0.0526
4.8000	0.3200	0.1210	0.2409	0.0291
5.4000	0.2800	0.1960	0.3234	0.0508
6.0000	0.2800	0.1742	0.2873	0.0500
6.1400	0.0000	0.0000	0.0000	0.0000

Segmental Division of Cross-Section

Segment Velocity Profile

Figures and summary data are displayed in the same measurement units as the data that has been entered, whether that be metres, cm, feet, inches, etc.

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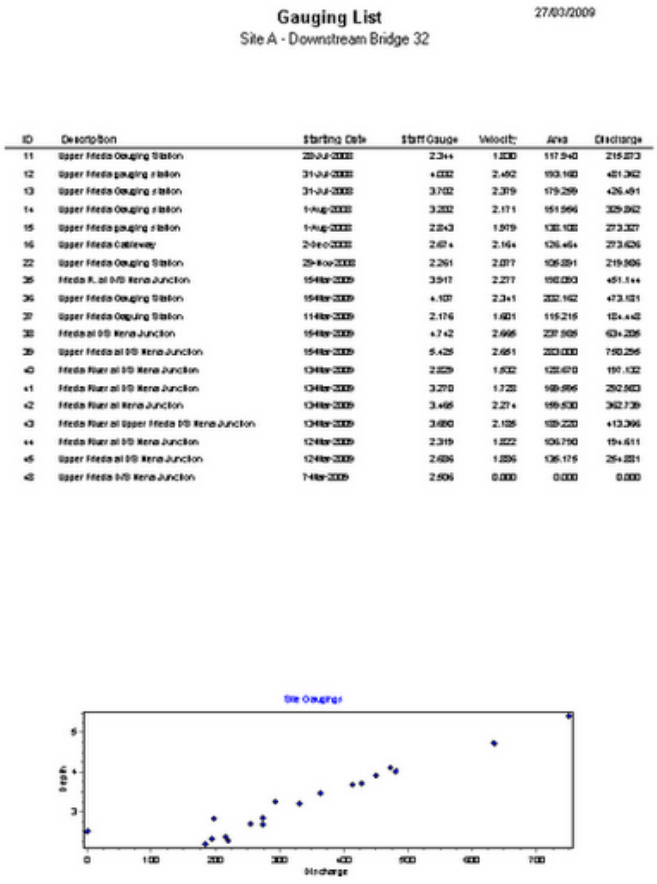
Here is the report layout of a sample gauging list report, which is created by selecting **Gauging List** from the **Reports** button.



Gauging List

27/03/2009

Site A - Downstream Bridge 32

ID	Description	Starting Date	Staff Gauge	Velocity	Area	Discharge
11	Upper Freda Gauging Station	28-Jul-2008	2.34	1.830	117.540	215.273
12	Upper Freda gauging station	31-Jul-2008	4.032	2.492	193.160	481.362
13	Upper Freda Gauging station	31-Jul-2008	3.702	2.379	179.299	426.491
14	Upper Freda Gauging station	1-Aug-2008	3.202	2.171	151.566	329.062
15	Upper Freda gauging station	1-Aug-2008	2.243	1.919	138.108	273.327
16	Upper Freda Cableway	2-Dec-2008	2.674	2.164	126.464	273.626
22	Upper Freda Gauging Station	29-Nov-2008	2.261	2.017	106.891	219.906
25	Freda R. at M3 Rena Junction	15-Mar-2009	3.917	2.277	150.093	451.144
26	Upper Freda Gauging Station	15-Mar-2009	4.101	2.341	202.162	473.101
27	Upper Freda Gauging Station	11-Mar-2009	2.176	1.601	115.215	184.442
28	Freda at M3 Rena Junction	15-Mar-2009	4.742	2.666	237.926	634.206
29	Upper Freda at M3 Rena Junction	15-Mar-2009	5.425	2.651	283.000	750.256
40	Freda River at M3 Rena Junction	13-Mar-2009	2.829	1.632	122.470	199.832
41	Freda River at M3 Rena Junction	13-Mar-2009	3.270	1.728	169.896	292.963
42	Freda River at Rena Junction	13-Mar-2009	3.466	2.274	159.530	362.739
43	Freda River at Upper Freda M3 Rena Junction	13-Mar-2009	3.650	2.105	169.220	413.396
44	Freda River at M3 Rena Junction	12-Mar-2009	2.319	1.822	104.790	194.611
45	Upper Freda at M3 Rena Junction	12-Mar-2009	2.626	1.836	136.175	254.831
48	Upper Freda M3 Rena Junction	7-Mar-2009	2.506	0.000	0.000	0.000

Figures and summary data are displayed in the same measurement units as the data that has been entered, whether that be metres, cm, feet, inches, etc.

If you select **File**, **Print** or click the Print icon, you can "Print to File" and export the gauging report as an xls, pdf, rtf or other file.

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23 Plug In Modules

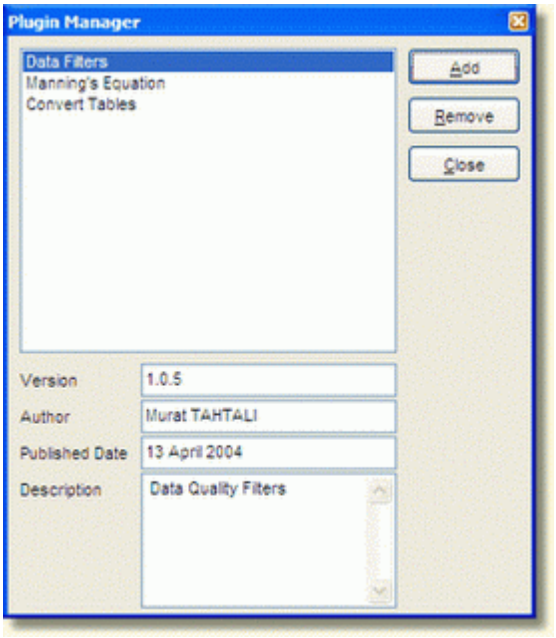
Plug Ins are used to enable third parties to develop their own applications that access the data within DataSight. DataSight Plug Ins operate with both DataSight Desktop and DataSight Enterprise.

23.1 Add a Plug In

To connect a Plug-in to DataSight

1. Go to the Tools menu and under Plug-Ins select Plug-In Manager.

2. The Plug-In Manager dialogue window appears.



3. The Window shows the current suite of Plug-Ins installed. You can view the Version number, Author, Publication Date and a brief Description of the Plug-In.

4. Click Add or Remove to manage your Plug-In suite. Plug-Ins are attached to DataSight through a .dll file located in the appropriate Plug-In directory on your computer or your local server.

5. Close the Plug-In Manager to return to the DataSight desktop.

6. Select Tools, Plug-Ins to view the available Plug-Ins from the drop down menu.

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24 Troubleshooting

Use this guide to troubleshoot any issues with DataSight.

If you do not find the answer here or elsewhere in the Help file then use the Forum or email support@seveno.com with the issue details.

24.1 General running issues

If you have any issues or errors when DataSight opens:

1. Check that you are only have one copy of DataSight running. Use the Windows Task Manager to confirm.
2. Check that no one else is concurrently connected to the DataSight Database.
3. Ensure you have enough free hard disk space on your machine.

24.2 Printing Issues

If you see the message "Default Printer not set" or "Cannot Print to screen" or other similar errors, check that your Printer/s are setup correctly.

24.3 Importing Issues

If you see the message box:

Check that all import options e.g. File type, Date Delimiter, etc. are appropriate to the file you are importing.

If you get the error message "User var not found during the import"

If you are using an Import Spec, check that all variables defined in the Import Spec are present in your DataSight Database.

If you see the message box:

Error
Error: Not enough disk space on drive C:. Please free some more disk space or set the 'Temp Data Path' to a different location in the Options
OK

1. Click Tools, Options then select General
2. in the Temp Data Path box, type or navigate to a new drive location.
3. Click OK.

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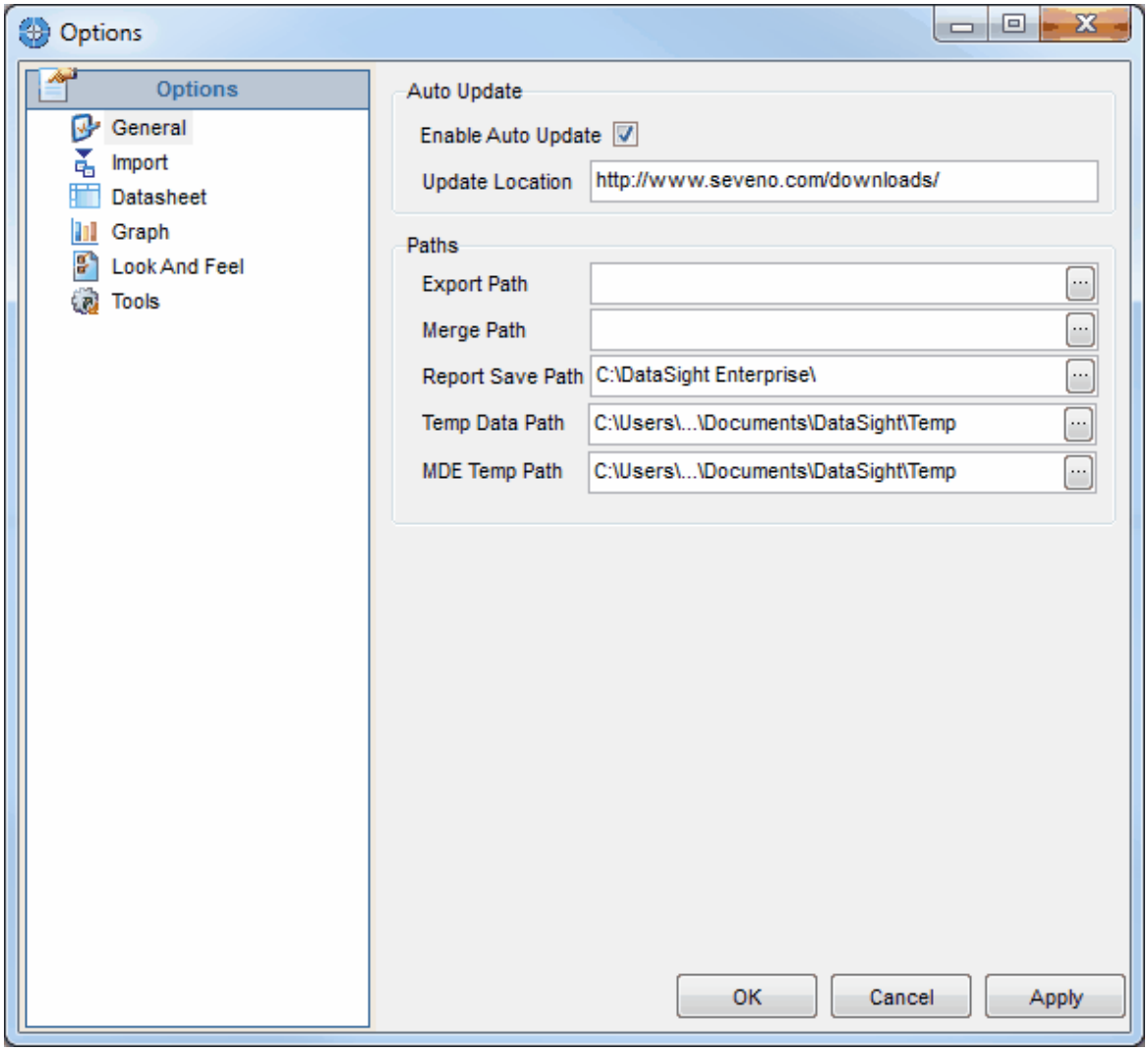
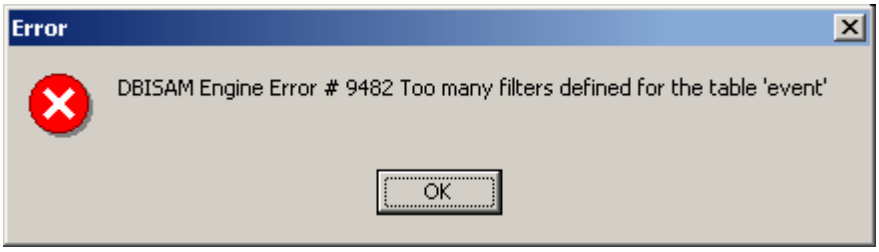
If you receive the error "DBISAM Engine Error # 11013 Access denied to table 'C:\Program Files\DataSight Enterprise\Temp\TempEvent.DAT'."

It is essential that a DataSight user has access rights to the paths nominated in **Tools**, **Options**. If users are not able to write to the default paths please change the paths in the Options window.



24.4 Exporting Issues

In certain circumstances if you are exporting a database and you uncheck a Level 4 (or Level 4s) under a station you may get this error message.



In this case the export will fail. If this happens re-export the database leaving all Level 4s checked. Then, open the exported database and delete the Level 4s from within the database itself.

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24.5 Merge Issues

Deleting a variable after you have mapped it during the merge process will cause the other mappings to scramble. You will need to remap these before proceeding with the Merge.

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25 Glossary of Terms

Find the definitions of commonly used terms in DataSight.

csv (Comma separated values)

Files with a .csv file extension are "comma-separated value" files. A csv file is one in which each value in the cells of a table row is delimited by and separated from the next value by a comma. The beginning of a row is indicated by a new line character.

Delimited

Delimited files use a special text character to separate each data value in a record. Typically the delimiter is either a tab or a comma, but any character may be used. The field delimiter denotes the beginning and ending of a data field e.g. ;123450; with a semi-colon (;) as the field delimiter identifies 123450 as the data value in that field.

dependent variable

A variable whose value is determined by the value of an independent variable. For example in a graph of temperature at different depths for a water body, temperature is the dependent variable. Any depth from the surface to the bottom can be chosen to see what the corresponding temperature at that depth is. By convention a dependent variable is plotted on the y axis but with DataSight you can choose the x axis if you wish.

dsd

A single zipped DataSight file containing all the database tables. This file format is suitable for sharing or emailing databases.

Field List panel

The bottom left screen panel displaying the available data variables in your DataSight database.

Fixed width

A fixed-width file contains data in columns, where each column is a certain width, and all values in that column are the same width.

Footer

Footers are fields that follow the main file content and describe characteristics of the file.

Header

Headers precede the main file content and describe the length of the content or other characteristics of the file.

html (HyperText Markup Language)

Files with a .html file extension have been created for use within a web browsing interface, such as Internet Explorer.

Import Spec

A file that contains specified DataSight parameters for importing data (including the mapping decisions).

independent variable

A variable whose value determines the value of other variables.It is called *independent* because within a certain valid range any independent value can be chosen to see what the dependent value is. For example in a graph of temperature at different depths for a waterbody, depth is the independent variable. Any depth from the surface to the bottom can be chosen to see what the corresponding temperature at that depth is.
By convention an independent variable is plotted on the *x* axis but with DataSight you can choose the the *y* axis if you wish. This can be be helpful in producing depth profiles for example.

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jpg

Files with a .jpg file extension are JPEG files, which is a commonly used standard method of compression for graphic images. The name JPEG stands for Joint Photographic Experts Group.

Level 1

An organizational level of data naming, which will be determined by the type of data you are working with. In the case of freshwater quality data, for example, an appropriate Level 1 may be Lakes, Rivers, Reservoirs etc.

Level 2

The first Data grouping level (with Level 1 being the organizational level). For example, in the case of freshwater quality data an appropriate Level 2 may be the name of a particular water body.

Level 3

The defined physical point at which data is collected. This forms the 2nd level in the hierarchy of data grouping underneath Level 2 and contains Level 4 data.

Level 4

An Level 4 is an occurrence of data sampling which occurs at a Level 3. Each Event (Level 4) is differentiated by its date.

parse

To define something in an orderly way. In DataSight, parsing the data enables DataSight to identify the different features of the data, eg Title Row, Number of Title Rows etc.

pdf (Portable Document Format)

Files with a .pdf file extension are created for easy document exchange between users. Documents can be viewed in the free Adobe Reader program.

rtf (Rich Text Format)

Files with the file extension .rtf are created for easy document interchange as most word processors are able to read and write **rtf** documents.

Text Qualifier

Denotes that a text value is enclosed within, eg the data field "Blue-greens" within a text qualifier of double quotes (") identifies the value Blue-greens as a text value rather than say a numeric value.

txt

Files with a .txt file extension are text files. They may contain text and numeric characters.

xls

Files with a .xls file extension have been created using Microsoft Excel.

xml (Extensible Markup Language)

Files with a .xml file extension can be used for sharing structured data, such as database information, between users - particularly via the Internet.

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[PICTURE _bm56n.bmp] 52

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